N.S.W. DEPARTMENT OF AGRICULTURE.

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES.

P L A N T D I S E A S E S U R V E Y.

for the

TWELVE MONTHS ENDING 30TH JUNE, 1951.

TWENTYFIRST ANNUAL REPORT

Notes compiled by officers of the Plant Pathological Section of the Biological Branch, New South Wales Department of Agriculture, Sydney, Australia.

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N.S.W. DEPARTMENT OF AGRICULTURE.

Biological Branch Staff.

C.J. Magee, D.Sc.Agr., M.Sc.	..	Chief Biologist
W.S. Sutton, B.Sc.Agr., A.A.C.I.	..	Senior Biologist
R.D. Wilson, M.Sc., M.Sc.Agr.	..	Plant Pathologist
Lilian Fraser, D.Sc.	..	Plant Pathologist
T.B. Kiely, D.Sc.Agr.	..	Plant Pathologist
J.R. Morschel, B.Sc.Agr.	..	Plant Pathologist
F.C. Butler, B.Sc.Agr.	..	Plant Pathologist
K.E. Hutton, B.Sc.Agr.	..	Plant Pathologist
R.J. Conroy, B.Sc.Agr.	..	Asst. Plant Pathologist
P.G. Valder, B.Sc.Agr.	..	Asst. Plant Pathologist
H.H. Randell	..	Bacteriologist
D. Corbett, B.Sc.Agr.	..	Asst. Bacteriologist
K. Baumgartner, B.Sc.Agr.	..	Asst. Bacteriologist

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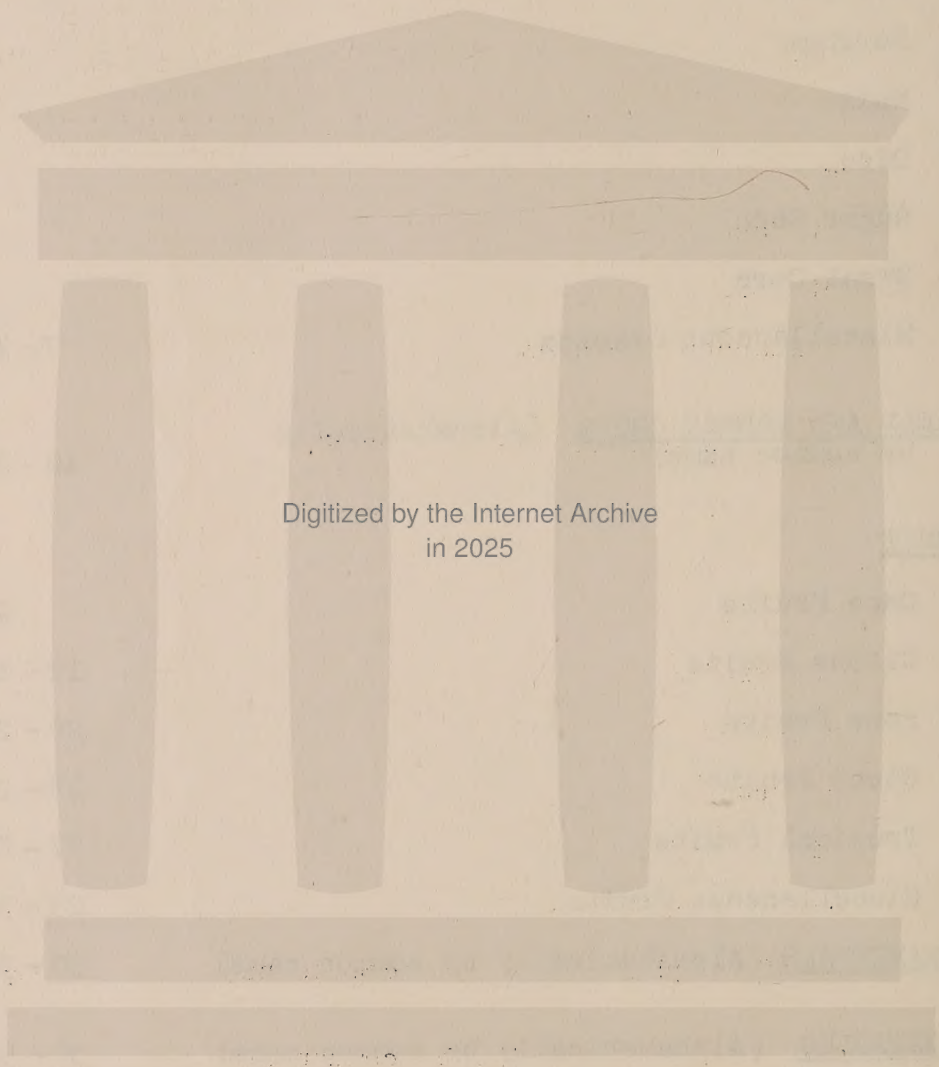

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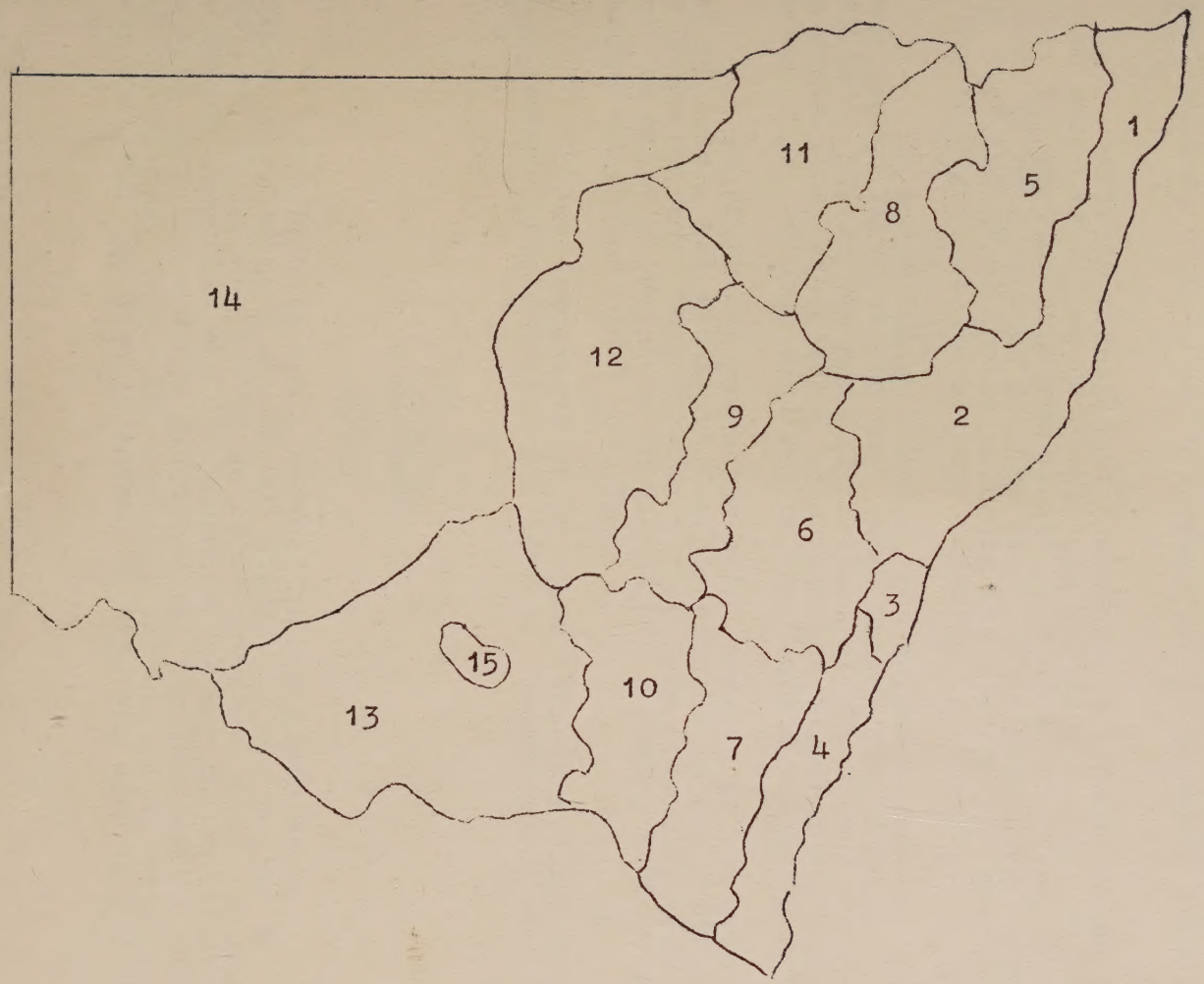

KEY.

1. North Coast (N.C.)
2. Central Coast (C.C.)
3. Metropolitan Area (M.A.)
4. South Coast (S.C.)
5. Northern Tableland (N.T.)
6. Central Tableland (C.T.)
7. Southern Tableland (S.T.)
8. North Western Slope (N.W.S.)
9. Central Western Slope (C.W.S.)
10. South Western Slope (S.W.S.)
11. North Western Plain (N.W.P.)
12. Central Western Plain (C.W.P.)
13. Riverina (R.)
14. Western Division (W.D.)
15. Murrumbidgee Irrigation Areas (M.I.A

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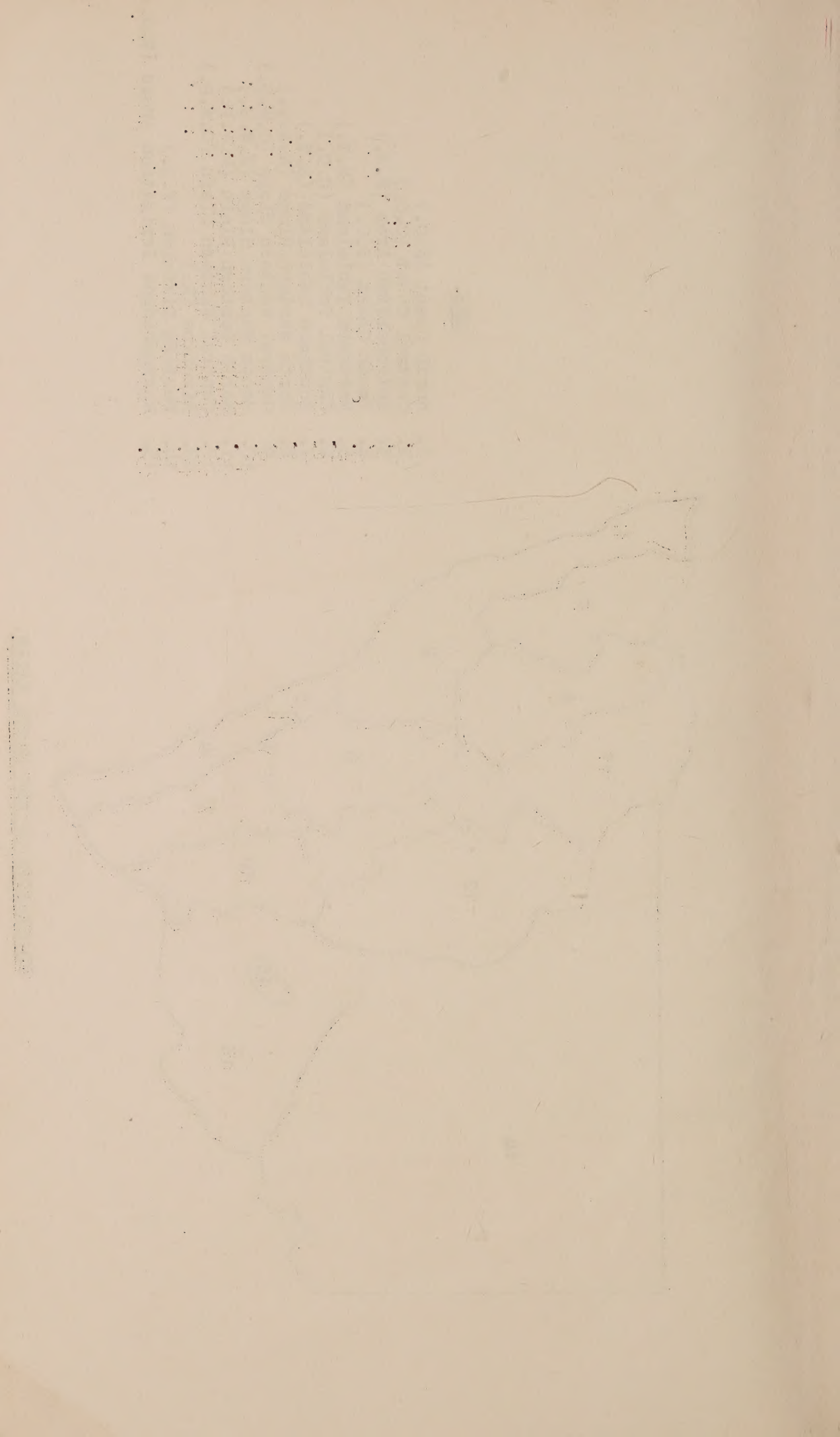

DEPARTMENT OF AGRICULTURE

NEW SOUTH WALES

BIOLOGICAL BRANCH - DIVISION OF SCIENCE SERVICES

PLANT DISEASE SURVEY - 1950/51

TWENTYFIRST ANNUAL REPORT.

WEATHER CONDITIONS.

Abnormally high rainfall, in late Winter and early Spring, in the Eastern and Northern portions of the State, was induced by a frequent southerly flow of tropical air. In normal seasons climate is influenced by air movement from the South.

Official precipitation records at Sydney, which this season were indicative of conditions existing in most of the State, but particularly the Coastal and Northern areas, showed a total of 68.87 inches for the year. This was 13.05 inches less than the 81.92 inches recorded for 1949/50 but was 22.45 inches in excess of the average rainfall for the last 90 years.

In early Summer rainfall was below average in all areas except the Riverina and normal Summer temperatures prevailed, but in January all portions of the State, other than the South West, experienced unusually low temperatures and above average rain. Floods occurred on the Central and North Coasts.

Rainfall was generally below normal for the greater part of Autumn but excessive falls continued on the Central and North Coasts. Temperatures varied from unusually warm in March to below average for April and May. Drying winds were experienced during March and April.

In June excessive rains again fell in coastal areas but elsewhere precipitation was normal. Temperatures were mild.

CEREALS

WHEAT

The 1950/51 wheat harvest in New South Wales yielded approximately 44,000,000 bushels from a sowing of 3,361,000 acres, at an average yield per acre of 13.1 bushels. The season generally was unfavourable, as may be gauged from the fact that the average yield for the previous season was 20.6 bushels per acre. The combined effects of an unusually heavy rainfall and high incidence of diseases were responsible

for this greatly reduced yield and the poor quality of the grain.

The season was remarkable for the predominance of leaf blighting and other organisms over the rusts.

FROST INJURY was less in evidence than usual. Winter conditions generally were mild, few severe frosts being recorded in the wheat belt. However, there were cases of quite severe damage in early maturing crops in the northern half of the State.

LEAF SPOT or WINTER BLIGHT (Septoria tritici) was unusually prevalent. In previous years this disease has been observed to be most severe in southern districts, but last season was perhaps more severe in northern areas. Even the uppermost flags, stems and glumes were attacked.

This disease caused considerable damage throughout the wheat belt.

FOOT ROT (Helmonthosporium sativum) was widespread and caused reductions in yield. There were no records of Fusarium culmorum and Curvalaria sp. associated with foot rot, though it seems probable that they were present. Wojnowicia graminis, however, was recorded.

STEM RUST (Puccinia graminis tritici) was as usual widespread, but in spite of the abnormally wet and humid conditions, was severe only in isolated cases.

Celebration and Warigo continue to show a high degree of resistance to the races present, while Gabo and Charter still show a certain amount of resistance in the field.

TAKE ALL (Ophiobolus graminis) was also widespread, being recorded as far north as Spring Ridge and Baan Baa. (N.W.P) Like foot rot, this disease was favoured by the moist conditions and contributed to the general reduction in yield.

BUNT (Tilletia caries and T. foetida) was very rare and of little importance.

LOOSE SMUT (Ustilago tritici) was severe in some crops in the Deniliquin (S.W.S.) district and it is thought that this is due to the use of infected seed over a period of years. Elsewhere it was only recorded as attacking odd plants.

MELANISM (non parasitic) occurred as usual in varieties such as Warigo and Hofed, particularly on the stem below the upper node. The condition was also observed in some other varieties and Hope hybrids in the Sydney University (M.A.) plots on the central coast and in the north west.

GLUME BLOTCH (Septoria nodorum) occurred throughout the wheat belt and was exceptionally severe, particularly in the northern half of the State. It was observed attacking leaves, stems, nodes and glumes. The attack on the nodes appeared to be even more widespread than on the glumes, and culminated in severe "node-breaking" in some areas, with the result that crops lodged.

This pathogen was particularly favoured by weather conditions in the northern part of the wheat belt.

No variety was observed to be resistant in the field, although some appeared to be susceptible than others.

LEAF RUST (Puccinia triticina) occurred throughout the wheat belt with infections ranging from slight to moderately severe. However, with Septoria tritici and other organisms occupying most of the flag, the damage it caused was relatively light.

FLAG SMUT (Urocystis tritici) was of little economic importance, the only records being of odd infected plants.

YELLOW SPOT (Helminthosporium tritici-repentis) was recorded for the first time in this State. Quite severe infections were observed in one or two crops in the north-west, but as observations were made on only a small area no reliable estimate of its importance can be given.

GRAIN DISCOLORATIONS (Helminthosporium and Alternaria spp. associated) were very common, being favoured by the wet conditions during and after the ripening of the grain. Black point, pinking, and general brown and grey discolorations were observed. Grain from the north-west and central districts was worst affected, though some badly discolored samples from the south-west were seen.

DOWNY MILDEW (Sclerospora macrospora) was recorded from a few areas.

BASAL GLUME ROT (Pseudomonas atrofaciens) was noted from the north-west.

BLACK CHAFF (Xanthomonas translucens var. undulosa) was noted.

HEAD BLIGHT (Fusarium sp.) was observed in various areas.

POWDERY MILDEW (Erispihe graminis tritici) occurred as usual, being particularly severe in experimental plots on the central coast.

ANTHRACNOSE (Colletotrichum graminicolum) was noted on basal sheaths and leaves.

LEAF SPECKLE (Unidentified) was observed in experimental plots on certain varieties. No organisms were isolated from the affected tissue and it seems possible that the condition is physiological or the manifestation of a resistant reaction.

WEATHER DAMAGE was responsible for considerable losses. As some of the areas carrying wheat were under water for considerable periods "physiological drowning" must have occurred. Heavy rain at harvest time caused lodging in the northern and central districts and much of the grain had shot.

The damp conditions favoured colonization by weak parasites and saprophytes, evidence of infection by primary pathogens being more or less obscured by harvest. Alternaria spp., Cladosporium herbarum and Epicoccum sp. were particularly abundant.

OATS.

STEM RUST (Puccinia graminis avenae) was again present throughout the State but did not develop to any serious extent.

FROST INJURY was, as in the case of wheat, less in evidence than in previous seasons, owing to the comparatively mild winter.

CROWN RUST (Puccinia coronata) was widespread as usual, being particularly severe in coastal districts.

SMUT (Ustilago avenae and U. kolleri) was reported from all districts but there were no records of severe infection.

BACTERIAL STRIPE (Pseudomonas striafaciens) was observed in the Sydney University plots (M.A.)

HALO BLIGHT (Pseudomonas coronafaciens) was observed in the Sydney University plots (M.A.)

SPECKLED BLOTCH (Septoria avenae) was widespread, with high incidence in parts of the south-west slopes.

LEAF SPOT (Helminthosporium avenae) was ubiquitous, though in the majority of cases damage was slight.

ANTHRACNOSE (Colletotrichum graminicolum) occurred mainly late in the season on the coast.

BARLEY.

SCALD (Rhynchosporium secalis) was detected from several areas, some varieties in experimental plots being severely infected.

POWDERY MILDEW (Erysiphe graminis hordei) was severe on the coast as usual.

NET BLOTCH (Pyrenophora teres = Helminthosporium teres) was recorded on the coast.

RYE.

RUST (Puccinia dispersa) was recorded in the Metropolitan Area.

BROOM MILLET.

RED STAIN (unidentified) was reported.

WEATHER DAMAGE was responsible for losses in some areas.

GRAIN SORGHUM.

RUST (*Puccinia purpurea*) was recorded.

RED STAIN. In one instance *Fusarium* sp. was observed to be associated with red stain.

JAPANESE MILLET.

No records.

MAIZE.

The harvest was considerably smaller than in previous years owing to the low acreage sown. Rain and floods, particularly in northern areas, prevented sowing and in many cases crops were sown but did not emerge. Nevertheless yields, on the whole, were very good.

ROOT and BASAL STALK ROT (*Gibberella moniliformis*, *G. saubinetii* and *G. fujikuroi* var. *subglutinans*) occurred in varying degree in all maize districts, but was severe only in low lying coastal areas which were flooded in the January-February period, or where drainage was bad.

COB and GRAIN ROTS (*Gibberella moniliformis*, *G. saubinetii* and *G. fujikuroi* var. *subglutinans*) were not much in evidence, which can be attributed to favourable weather in Autumn.

LEAF BLIGHT (*Helminthosporium turcicum*) developed extensively throughout coastal and northern tablelands districts, causing isolated complete losses in early maturing hybrids. It was severe on hybrids at Grafton which had been selected for resistance.

DRY ROT (*Diplodia zeae*) was recorded but there were no records of its importance.

TOP ROT (*Fusarium* sp.) was recorded in a crop at Nowra. Under wet conditions the tassels and sheathing leaves of a few plants were blighted and there were large lesions on the bases of the lower leaves.

RICE.

No diseases of a parasitic nature have been recorded on rice in New South Wales.

BROWN GLUME STAIN (non parasitic) was more prevalent in the M.I.A. this year, but apparently had no effect on yield.

SUGAR CANE.

Information supplied by the Colonial Sugar Refining Co. Ltd. shows that, during the 1950/51 season 359,849 tons of sugar cane were crushed.

Losses due to disease were estimated as follows:-

FIJI DISEASE (Virus)	321 tons
MOSAIC (Virus)	3 "
RED STRIPE (Xanthomonas rubrilineans)	4 "
	328 "

The estimated loss of 328 tons represent approximately 0.09% of the total tonnage crushed.

Damage caused by other diseases was very small and was not estimated.

FIJI DISEASE (Virus). Although infection has been reduced over the last few years this disease is still widespread, and although the varieties now grown are less susceptible, great care must be taken to prevent them from becoming seriously infected.

RED STRIPE (Xanthomonas rubrilineans). The loss from this disease declined from 35 tons in 1948/49 to 15 tons in 1949/50 and to 4 tons this season.

MOSAIC (Virus). Losses from this disease have been further reduced but the disease has become increasingly evident in the valuable seedling variety 41 S.N. 3339, a large area of which shows infection. Some disease has also been found in Trojan.

RED ROT (Physalospora tucamanensis) caused minor damage in undisclosed areas.

LEAF SCALD (Bacterium albilineans). Small outbreaks have occurred in the Richmond River district (N.C.)

PINEAPPLE DISEASE (Ceratostomella paradoxa) was again troublesome in the Clarence River district and germination was affected in a number of instances.

EYESPOT DISEASE (Helminthosporium sacchari). Some cases of severe infection occurred during the Winter months in crops of Atlas grown on rich sandy soils in the Clarence River district (N.C.) and traces have been observed in other varieties.

CHLOROTIC STREAK (Virus). This disease has been prevalent in all districts for some time but has attained greater importance now that Trojan, which is moderately susceptible, is a major variety.

GUMMING (Xanthomonas vasculorum) seems to have been eradicated.

SWEET CORN.

ROOT and BASAL STALK ROT (Gibberella moniliformis) was recorded only in crops past the harvesting stage.

COB and GRAIN ROT (Gibberella moniliformis, G. saubinetii and G. fujikuroi var. subglutinans) was found only in cobs past maturity.

LEAF BLIGHT (Helminthosporium turcicum) was the most serious disease in the Hawkesbury district (M.A.) but the damage was not great except in late sown crops. Such crops, however, are now seldom grown.

RUST (Puccinia sorghi) was much less in evidence than usual. Conditions apparently did not favour this disease which is usually observed in all sweet corn growing districts.

STUNTING (? Genetical factor). A stunting and chlorotic streaking was observed in a Golden Bantam hybrid at Yanco. However, no pathogenic organisms were found and the condition was attributed to the genetical make up of the inbred lines.

MISCELLANEOUS GRASSES.

BARLEY GRASS (Hordeum leporinum).

LEAF SPOT (Helminthosporium sp.) developed very extensively throughout the State and caused premature haying off.

STEM RUST (Puccinia graminis) was recorded.

BUNT (Tilletia hordei) again occurred widely. A heavy infection was observed at Temora (S.W.S.)

LEAF SPOT (Septoria passerinii) was again observed at Wagga Wagga (S.W.S.).

BENT GRASSES (Agrostis spp.)

BROWN PATCH (Rhizoctonia solani) was severe throughout the Metropolitan Area and caused damage to lawns and sports greens.

DOLLAR SPOT (Sclerotinia homoeocarpa) was observed to be widespread in the Metropolitan Area.

BLACK SCUM (algal) was observed in the Metropolitan Area.

BUFFALO GRASS (Stenotaphrum secundatum)

LEAF SPOT (Piricularia sp.) was again observed in the Metropolitan Area.

FOOT ROT (Curvularia sp. associated) was recorded from the western district.

COUCH GRASS (Cynodon dactylon)

BROWN PATCH (Rhizoctonia solani, Curvularia and Helminthosporium spp., alone and in association) was again widespread.

DOLLAR SPOT (Sclerotinia homoeocarpa) was recorded in the Metropolitan Area.

RUST (Puccinia cynodontis) was noted.

SMUT (Ustilago cynodontis) occurred extensively in coastal districts as usual.

CROWS FOOT GRASS (Eleusine indica)

BLIGHT (Helminthosporium sp.) was again reported from the Metropolitan Area.

GOLDEN TOP (Lamarckia aurea)

STEM RUST (Puccinia graminis) was recorded from the north-west.

KIKUYU (Pennisetum clandestinum)

LEAF SPOT (Piricularia sp.) occurred in the Metropolitan Area.

LEAF SPOT (Helminthosporium sp.) was reported from the central coast.

LOVE GRASS (Eragrostis major)

DOWNY MILDEW (Sclerospora macrospora) was recorded from Condobolin (C.W.P.)

PARRAMATTA GRASS (Sporobolus capensis)

SOOTY HEAD (Helminthosporium ravenelii) was again very common.

PASPALUM (Paspalum dilatatum)

ERGOT (Claviceps paspali) was common throughout the coastal and tablelands districts, though it was less severe than usual.

PERENNIAL RYE GRASS (Lolium perenne)

LEAF RUST (Puccinia coronata) was very prevalent.

PRAIRIE GRASS (Bromus unioloides)

SMUT (Ustilago bromivora) occurred widely.

ANTHRACNOSE (Colletotrichum graminicolum) again developed extensively in the Metropolitan Area.

REED GRASS (Phragmites communis)

RUST (Puccinia magnusiana) has been recorded in the Metropolitan Area and was noted to be very severe along the Hawkesbury River (M.A.)

SPEAR GRASS (Stipa sp.)

STEM SMUT (unidentified) was recorded.

STINK GRASS (Eragrostis ciliaensis)

DOWNY MILDEW (Sclerospora macrospora) was reported from Warialda (N.W.S.)

SUMMER GRASSES (Digitaria adscendens and D. sanguinalis)

LEAF BLAST (Piricularia grisea) was recorded widely.

RUST (Uredo sp.) was reported from Kenthurst and Glenorie in the Metropolitan Area.

SMUT (Ustilago rabenhorstiana) was detected at Kenthurst and Glenorie (M.A.)

WILD OATS (Avena fatua).

STEM RUST (Puccinia graminis avenae) was reported from many areas.

CROWN RUST (Puccinia coronata) occurred extensively.

SPECKLED BLOTCH (Septoria avenae) was again recorded.

WIMMERA RYE GRASS (Lolium rigidum).

STEM RUST (Puccinia graminis) was reported from several localities.

WINTER GRASS (Poa annua)

LEAF RUST (Puccinia poarum) was reported from several localities on the coast and tablelands.

STEM RUST (Puccinia graminis) was recorded.

FIELD AND FODDER CROPS.

CLOVERS.

RUST (Uromyces spp) was reported on subterranean clover (Trifolium subterraneum) red clover (T. pratense) and white clover (T. repens) in most districts.

CHARCOAL ROT (Macrophomina phaseoli) was recorded for the first time in N.S.W. at Inverell (N.T.)

COWPEAS.

No records.

FIELD PEAS.

LEAF SPOT (Mycosphaerella pinodes) was reported from Castle Hill (M.A.)

LINSEED.

PASMO (Sphaerella linorum) is now general throughout the linseed crops in New South Wales, lesions on the leaves, stems and bolls being common. This disease reached its maximum development late in the season. There were cases of marked reduction in yield in the M.I.A.

CROWN ROT and LODGING (Unidentified) occurred widely in the north-west and caused considerable damage. The stem at and for 1 - 2 inches above ground level in lodged plants was, in most cases, swollen, and the outer layers of stem tissue had cracked. It was in this region that the stems had given way.

It appears that the excessive rain in June and July had influenced the weakening of the stem tissue at ground level, possibly in conjunction with the action of pathogenic fungi. The May-June sowings which were emerging at that time were most affected.

Rhizoctonia solani, Sphaerella linorum and other fungi were isolated from the affected tissues. S. linorum has been shown in glasshouse tests to be able to attack plants at ground level but it is not known whether it can do the same in the field.

ZINC DEFICIENCY was recorded from Tamworth (N.S.W.) and in the club head stage from Upper Haughton, via Barraba (N.W.S.) on new land.

LUCERNE.

LEAF SPOT (Pseudopeziza medicaginis) was favoured by the wet season and developed extensively in many districts, particularly on the coast where defoliation was quite severe in some cases.

WITCH'S BROOM (Virus). Considerable infection was observed in the Riverina and the Western Division where it has become, in many cases, a limiting factor in the useful life of the stands.

BLACK STEM (Ascochyta imperfecta) was reported from Temora (S.W.S.)

RUST (Uromyces medicaginis) was recorded from the M.I.A. in the Spring.

DOWNY MILDEW (Peronospora trifoliorum) was reported from the M.I.A.

MEDICS.

LEAF SPOT (Psuedopeziza medicaginis). Heavy infection on burr medic (Medicago denticulata) was observed in the Metropolitan Area and at Narromine (C.W.S.)

MOSAIC (Virus) was recorded on the same host at Narromine (C.W.S.) but not much was seen.

SUNFLOWER.

WILT and STALK ROT (Sclerotinia minor) was recorded again at Yanco Experiment Farm. About 30% of the plants in the experimental plots were infected.

BIG BUD (virus) was also recorded on a small percentage of the plants at the same farm (M.I.A.).

TOBACCO.

DOWNY MILDEW (Peronospora tabacina) was general throughout the Tenterfield and Texas (N.T.) areas.

BACTERIAL WILT (Bacterium solanacearum) was present in all crops inspected and caused considerable loss. Apparently the seasonal conditions were very favourable to the disease. About 50% of ~~the~~ crop was infected.

WEATHER DAMAGE caused some losses in all tobacco growing areas.

CANE FRUIT.

BLACK CURRANT

LEAF SPOT (Mycosphaerella ribis) caused moderate infection at Batlow (S.T.)

BOYSENBERRY AND YOUNGBERRY.

ANTHRACNOSE (Elsinoe veneta). Heavy leaf and cane infection was reported from central tableland and coastal localities. At Bathurst (C.T.) following unusually humid weather, fruit pedicels were attacked, resulting in fruit shrivelling.

CITRUS FRUITS.

ROOT, COLLAR and BROWN ROTS(Phytophthora citrophthora The record rains and periodic floods of the past three seasons have culminated in a destruction of citrus trees in coastal districts unparalleled since the cycle of similar weather in the 1860's. Heaviest losses occurred on the alluvial flats along the Hawkesbury River and its tributaries (M.A.) where the flooding has been most frequent. In the Windsor section alone a total of 40,000 trees has been killed and an equal number so seriously affected that their economic recovery is improbable. The full extent of the damage was not apparent until dry Summer weather commenced. Figures are not yet available for losses of trees in other sections of the Hawkesbury River and the Hills (M.A.) and Gosford (C.C.) districts.

Damage in the Hills district has not been so serious but older orchards are in very poor condition, particularly in the less well drained soils, and loss of vigour is apparent even in moderately well drained soil.

In the citrus growing sections of the central coast, orchards in the lowland areas of Ourimbah, Lisarow, Narara, Niagara Park and Wyong Creek have suffered particularly. Continued heavy rain in the Autumn, Winter and early Spring of 1950 provided ideal conditions for root rot. In many orchards little or no underground drainage is provided and main surface and cut-off drains became silted up.

In some of the rather less badly drained areas in the central coast section, root damage was not suspected until the Spring when many trees failed to make satisfactory new growth and crop settings were very light to absent.

In the Murrumbidgee Irrigation Areas, Winter and Spring weather was wetter than average, resulting in increased root rot activity. During November, particularly in the Leeton section, increasing temperatures resulted in deterioration in appearance of affected trees and some cases of sudden and spectacular collapse occurred. This was most marked in old blocks where a degree of infection was present in previous years. Sparseness of foliage and decline in

vigour is evident in trees in older blocks throughout the area. Tree decline as a result of root rot was also reported from orchards in rather heavy soil at Dubbo (C.W.S.) following excessive rain during Winter and Spring.

In all citrus growing areas trees on trifoliate stock are performing very well and exhibit obvious contrast to trees on rough lemon stock. A strong impetus has been given to the use of this stock which is in demand for re-planting operations, particularly in the Hawkesbury River area.

Collar rot was moderately active during early Spring in orchards on heavy soils in the Hills district and Hawkesbury River (M.A.), especially in mature Washington Navel orange trees. The disease was temporarily halted by dry weather during late Spring and early Summer. Excessive rain occurred in January and in the warm moist conditions which followed collar rot activity was greatly increased. Along the Hawkesbury River and its tributaries, especially where flooding occurred in January, trees in slightly higher better drained soils, above the root-rot affected sections, became affected with multiple infections. Mature trees of Washington Navel orange, mandarin and grapefruit have been attacked and heavy losses are inevitable. In some of these blocks flood silt deposited around the trees and, covering the bud union, increased the liability to collar rot.

In the Central coast section collar rot was extremely virulent during January, February and March in several lowland orchards, but was not particularly trouble-some in the Somersby-Mangrove Mountain area. The disease appeared in some orchards where collar rot had previously been unknown, and Washington navel oranges in the 20-25 year group were particularly affected, many of them in reasonable to good condition. In one orchard 270 trees out of 300 were found to be severely affected. Most of the infection appeared to have taken place in January, when 20 inches of rain were recorded at Narara Viticultural Nursery. (Mean temperature for January, 75.5°F.) Extension of the disease was so rapid that considerable damage had occurred before growers were aware of its presence. Gum production was inconspicuous. Isolations from wood showed that the fungus had, in some cases, penetrated to a depth of 3 inches.

In some orchards it was observed that trees noticeably affected with root rot had not developed collar rot, whereas moderately vigorous trees on better drained slopes were seriously attacked.

At Narromine (C.W.S.) flooding of some orchards by the Macquarie River occurred several times during 1950, and during Winter, Spring and early Summer constant rain and high humidity resulted in very active collar rot development. This was checked by dry conditions in the late Summer, but tree losses were heavy in some orchards. Shoot and branch attack occurred in inundated orchards.

In the Paterson River (C.C.) district, collar rot was very active in orchards of old seedling oranges during late Summer.

Seedling blight was severe in only one Metropolitan nursery, on budded yearling stocks of rough lemon.

Brown rot of fruit caused moderate losses of late hanging Washington navels in the Hills district (M.A.) and Gosford district (C.C.) during early Spring 1950. An unusual infection of Emperor Mandarins occurred in Colo, lower Hawkesbury River and some Hills district orchards (M.A.) during July. Picking was delayed by a fortnight of almost continuous rain during late June. Subsequently fruit and leaf attack occurred, the fungus sporing freely on the affected tissues. As a result, many trees were partially or completely defoliated and a high percentage of fruit rotted. Twig die-back also occurred. The disease was noticeably severe on trees carrying a heavy crop, and well supplied with nitrogen. Seville oranges in one Colo River orchard were similarly affected.

Although collar and root rot was extra-ordinarily active, brown rot of fruit was of minor importance during Autumn and Winter, 1951. Some slight losses of Washington navel oranges and lemons were reported from Gosford (C.C.) and Hills district (M.A.) orchards. It was again noted that where fowls had been ranged in orchards brown rot was relatively more serious.

BLACK SPOT (Guignardia citricarpa). This disease appeared early in October in some Hills district (M.A.) and Hawkesbury River (M.A.) orchards following a spell of rather high temperatures. The warm weather was of short duration and the further extension of the disease was checked during the early Summer and losses were not heavy. A further outbreak took place in some Hills district orchards following hot weather in December, but this was also checked by a cooler change and rain.

In the Gosford district (C.C.) black spot was not serious, the low summer temperatures prevailing not being conducive to its development. Light outbreaks of this disease over the past two seasons have resulted in a reduction of the recommended spray programme by a number of growers to 2 or even 1 applications of Bordeaux mixture. Losses can be expected to be heavy if this policy is adopted when seasonal conditions favourable for black spot development again occur.

Heavier losses occurred in the Coopernook-Moorland area (C.C.), where the average temperatures are slightly higher than at Gosford. A rather limited amount of spraying has been carried out in this district because of the tendency for an increase in rust mite infestation to follow Bordeaux spraying. Where the recommended black spot programme was used in conjunction with a dual white oil spray of scalicidal strength excellent control of black spot and almost complete freedom from rust mite infestation was obtained.

Severe black spot was observed on unsprayed seedling Valencia oranges at Mount George (C.C.) in October, 1950. Sprayed trees were free from disease.

Isolated outbreaks of black spot were noted at Werombi (S.C.), on late hung valencia oranges in December, 1950. This district is normally considerably drier than the

Hills and Gosford districts and black spot sprays have never been required, although fruit is regularly held for late Summer marketing. The moist late Spring weather during the early growth of this fruit may have been responsible for infection taking place.

Some infection of intermediate crop lemons was noted in the Hills district (M.A.) in March, 1951.

An unusual outbreak of black spot occurred on main crop lemons in many Hills district (M.A.) orchards in June, 1951 following about a week of high sun temperatures in May. The exposed side of the fruit developed a scald-like series of very small coallescing lesions. This occurrence appeared to be associated with the use of fowl manure as a source of nitrogen.

Infection occurred on up to 20% of fruit on some trees but the overall loss was light. The disease was confined to fruit on the northern half of the tree.

A fruit rot caused by Gingnardia citricarpa was observed in Valencia orange fruits that had been stored for six weeks at room temperature during November and December at Gosford (C.C.). No information is available concerning the condition on arrival of any shipments of Valencia oranges to Asian ports.

MELANOSE (Diaporthe citri). During the past season there has been an alarming build up of this disease in all coastal citrus growing districts. Conditions following the blossoming period were ideal for fruit infection and the accumulation of dead wood in many trees has favoured the production of abundant inoculum. Particularly severe fruit disfigurement occurred in Washington navels in the Wyong, Ourimbah, Palmdale, Niagara Park and Lisarow districts of the central coast and in old orchards in the Hills district and Hawkesbury River (M.A.). At Moorland (C.C.) almost the whole Washington Navel crop was badly marked, spraying where carried out being too late for effective control. In the Paterson district (C.C.) infection was heavy also.

In some Pitt Town and Hawkesbury and Colo River (M.A.) orchards infection of Emperor mandarins and Seville oranges on old trees was particularly severe. Lemons also, in Gosford (C.C.) and Hills district (M.A.) orchards, were heavily marked, particularly in old orchards.

Melanose was only of minor significant on Valencia oranges which appear to have a considerable degree of resistance to this disease.

Leaf and twig infections were prevalent in all susceptible varieties and some branch die-back of Washington navel and Seville oranges occurred.

SCAB (Sphaceloma fawcettii scabiosa). Maincrop lemons in the Gosford district (C.C.), in spite of favourable weather conditions, were not severely affected because of the very general adoption of control measures by growers. It has been observed that where fowls are ranged in orchards there is a decided increase in the severity of scab, trees adjacent to fowl sheds showing the greatest amount of fruit and foliage infection.

In the Hills and Hawkesbury River districts (M.A.) good control of scab was obtained where sprays were applied but infection was heavy on unsprayed trees in those districts and in home gardens in the metropolitan area. Autumn settings of lemons were moderately to heavily infected in all districts.

Particularly severe foliage and fruit infection of Wheeny grapefruit occurred at Ourimbah, Mangrove Mountain and Somersby (C.C.). Infection was also noted on a late flush of growth in May on lemons and Wheeny and Marsh grapefruit in the Gosford district.

In several Kenthurst and Ebenezer orchards (M.A.) foliage and fruit of Emperor mandarins showed evidence of Spring infection. Infection was also observed on fruit of Seville oranges at Agnes Banks, Colo River (M.A.) and Narara Viticultural Nursery (C.C.) and of tangelos, mandarins and Rangpur lime at Narara Viticultural Nursery.

SEPTORIA SPOT (Septoria depressa). Infection of fruit on unsprayed or late sprayed trees was quite severe in 1950 on Washington and Thompson navel oranges, developing much earlier than usual (see 1950 report). Eureka lemons, mandarins, grapefruit and Valencia oranges developed a moderate amount of spot during late Winter and early Spring. The 1951 Summer and Autumn season has been particularly dry and though the time of infection has not yet been determined it is anticipated that it will be much later than in the previous two seasons when it occurred in March.

A superficial scald condition which developed in Summer lemons in several Leeton (M.I.A.) orchards and at Barooga (Riv.) during Summer and Autumn may possibly be associated with Septoria infection.

The disease is still unrecorded in coastal districts.

BROWN SPOT (Cause undetermined). This disease has continued to increase in severity. During the Spring and late Summer seasons weather conditions were particularly favourable for infection and young growth was very badly blighted, particularly on vigorous young trees at Pitt Town, Ebenezer, in other Hawkesbury River districts (M.A.) and in the Gosford district (C.C.). Application of Bordeaux mixture as shoot growth commenced gave little or no control. Some fruit infection, particularly of half grown fruit, was also noted. Moderate fruit losses occurred at Lower Portland and Sackville (M.A.). Infection of yearling trees in a Kurrajong (C.T.) nursery was so severe as to render them unfit for planting.

ARMILLARIA ROOT ROT (Armilaria mellea) continues to be a major cause of loss of trees in the Mangrove Mountains, Somersby and Kulnura areas (C.C.) and in the Maroota district (M.A.) and in the lighter soils of the Hawkesbury River flats (M.A.). Poor prices for maincrop lemons have resulted in many growers allowing fruit to hang until tree ripe. This has had a disastrous effect on trees affected with Armillaria root rot.

GREEN AND BLUE MOULDS (Penicillium digitatum and P. italicum) were important in causing breakdown in some lines of Washington Navel fruit picked during wet periods in the Winter of 1950. Extremely satisfactory returns were obtained by growers whose fruit underwent the borax bath and wax emulsion treatment now in use in two of the co-operatively owned packing houses at Gosford (C.C.). In the M.I.A. also losses due to moulds occurred in some packing sheds.

STEM END ROT (Diaporthe citri). In storage experiments with lemons, conducted at Gosford (C.C.) stem end rot proved to be the principal cause of wastage. Losses as high as 70% of untreated fruit were obtained after six months storage at room temperature. With Valencia and Washington navel oranges, stem end rot was second in importance to blue and green mould.

SOOTY BLOTCH (Gloeodes pomigena). Unusually heavy infection was observed on all unsprayed citrus varieties in coastal orchards. Washington Navel oranges and Marsh grapefruit were particularly badly blemished.

PINK DISEASE (Corticium salmonicolor). Following three years of above-average rainfall, this disease became well established in a citrus orchard in a protected humid locality in the Thora (Bellinger River) district (N.C.). Infection has resulted in loss of limbs of young and mature trees and some have been completely killed.

SCLEROTINIA BLIGHT (Sclerotinia sclerotiorum) was recorded at Terrigal (C.C.) causing mild twig blighting of young lemon trees. Only very few infections of rough lemon stocks were noted in metropolitan nurseries.

STEM PITTING (Virus). Field surveys confirm last year's observations that this disease is widespread in coastal plantings of Marsh grapefruit and is well established in some M.I.A. and Murray River (W.D.) orchards. Surveys have shown that the virus is widespread also in varieties of orange, mandarin, lemon etc., particularly in coastal orchards and to a less extent in M.I.A. and Murray River (W.D.) orchards, but causes them no apparent harm.

SCALY BUTT (Virus). No new records.

PSOROSIS (Virus). No new records.

SHELL BARK (Suspected virus). Particularly severe symptoms were seen on aged Eureka lemons in a Wisemans Ferry (M.A.) orchard. A condition which appears to be identical with lemon shell bark was seen on some strains of Seville orange at Agnes Banks and Wisemans Ferry (M.A.).

UNTHRIFTINESS OF ELLENDALE MANDARINS (Suspected virus). In a block of 11-year-old Ellendales on rough lemon at Kenthurst (M.A.) first signs of deterioration were seen in a small proportion of the trees. A block of Ellendales on rough lemon stock at Cooranbong (C.C.) developed the unthriftiness characteristic of this variety at the unusually early age of three years. Twelve-year-old Ellendales on Poncirus trifoliata in orchards at Ourimbah (C.C.) and Wisemans Ferry (M.A.) were noted to be in excellent condition. In an orchard at Dural

(M.A.) where a large block of Ellendales on rough lemon stock had been in poor condition for 12 years, one tree had been top-worked to Washington navel orange. This scion was growing very well and in excellent condition.

SUDDEN DEATH (Undet.) Sudden wilting and death of trees on trifoliata stock has been recorded from a number of coastal orchards. In the past year three trees in Hills district orchards (M.A.) and four trees in the Gosford district (C.C.) have come under notice.

EXANTHEMA (Copper deficiency) has been less evident than usual in the Gosford district (C.C.) during the past season, although many cases of response to foliage applications of Bordeaux mixture and soil applications of bluestone were observed.

YELLOW LEAF (Magnesium deficiency) was very much in evidence again during the past year, particularly where crops of fruit were heavy, in the Gosford district (C.C.) Pitt Town (M.A.) and some Hills district (M.A.) orchards. Magnesium deficiency symptoms were also reported on citrus at Tomingly (C.W.S.) and Stanbridge (M.I.A).

MOTTLE LEAF (Zinc deficiency) was noted in a number of M.I.A. and Murray River (W.D.) orchards and from Barmedman (S.W.S.). Regular spraying is now practised in most districts where this deficiency is present. Zinc deficiency symptoms were more noticeable than usual in some Pitt Town (M.A.) orchards.

BORON DEFICIENCY. This condition was observed for the first time in citrus in N.S.W. at Narromine (C.W.S.) It is not as yet severe. Thompson grapefruit only were affected, about 10% of the fruit on some trees having hard gum-impregnated rind.

ROOT FIBRE ROT (Excessive soil acidity). Young trees on trifoliata stock in the Ourimbah (C.C.) area again developed fibre rot in late Spring, accompanied by wilting and leaf fall. Autumn growth developed normally and root growth was good following applications of lime. The condition appears to be most serious in acid soils in the pH range 3.8 to 4.4 but a number of trees are affected at a soil reaction of 4.8 to 5.2. A similar condition was shown by a large block of young Valencias on trifoliate stock at Leeton (M.I.A). The land had been used previously for vegetable growing and the lavish use of sulphate of ammonia had resulted in a reduction of pH value of the soil to 4.4. Trees on lemon stock, both at Ourimbah and Leeton, are growing normally.

WATER SPOT (Non-parasitic) was responsible for some heavy losses of Washington navel oranges during August, 1950 in the Gosford district (C.C.). Many growers delayed harvesting in the hope of rising fruit prices, and heavy rains in August, combined with deterioration of rind quality, resulted in losses of 10-15% of the crop in some orchards.

At Yoogali (M.I.A.) water spot was noted on Valencia oranges following moist Winter and early Spring weather. Losses were slight.

DIE BACK OF WHEENY GRAPEFRUIT (Probably nutritional). Cases of moderate to severe die-back associated with heavy cropping were recorded from many coastal orchards and from Curlwaa (W.D.). Yellowing and leaf fall but no actual die-back was reported from Stanbridge (M.I.A.).

First signs of leaf yellowing were noted in April in some coastal orchards, which is earlier than usual.

MANDARIN SCALD (probably nutritional). Some cases of scald were reported from Hills district and Hawkesbury River orchards on Emperor and Thorny mandarins, but as the crop generally was rather light, the condition was not marked.

WATER INJURY TO TREES ON TRIFOLIATA STOCK. At Springfield (C.C.) a number of large 20-year-old trees of Washington Navel on trifoliata stock have commenced to deteriorate and are showing loss of leaf and extreme yellowing, and several have died. The soil in which they are growing had been completely waterlogged for several months following January rains. These trees had remained in excellent condition during the wet seasons of 1949 and 1950. Similar injury of trees on trifoliata stock was observed at Terrigal and Ourimbah (C.C.).

DRY FRUIT. During December and January many Valencia fruit in coastal orchards held for late marketing in the hope of high prices developed "dryness" on the trees. Flushes of growth made during December are believed to have been the cause of this. Unthrifty trees failed to make vegetative growth at that time and the fruit on these did not dry out. Many consignments had to be condemned on the Newcastle and Sydney markets.

RIND BLEMISH. Because of the continuously wet conditions of Winter and early Spring, fruit rind was rather soft and blemishes due to rubbing were numerous. In the case of Valencia oranges on trees sprayed for black spot control these abrasion marks became black and unsightly, considerably reducing the value of the fruit. This condition was most marked in some Hills district (M.A.) orchards.

FRUIT FALL. Excessive fruit fall of Washington navel, common oranges, Emperor and Ellendale mandarins, was reported, particularly from the Hills district (M.A.) during July, 1950, following excessive rains.

SOOTY MOULDS (Capnodium spp.) were reported from a number of Hills district (M.A.) orchards where white wax scale infestation was heavy.

FELT FUNGUS (Septobasidium pseudopedicellatum) was recorded from a number of coastal orchards in humid localities.

INSECT PARASITES. Sphaerostilbe aurantiicola continued to be prevalent on yellow scale and purple scale in citrus orchards in the Hawkesbury River (M.A.), Colo River (M.A.) and Gosford districts (C.C.). An unidentified fungus was particularly effective on white louse in the Colo River (M.A.) district.

POME FRUITS.

The pome fruit crop was rather light this season because of poor setting occasioned by cold wet weather during the blossoming period. Persistently wet weather during the Spring interfered with the application of disease control measures.

APPLE.

BLACK SPOT (Venturia inaequalis). An epiphytotic of black spot occurred during the Spring and early Summer. Dry weather from January onwards in most districts restricted secondary infection, but in spite of this relief, fruit was badly marked by primary infections and heavy losses were sustained.

For the first time since the 1934-35 season there was an outbreak of black spot on the M.I.A. On two farms in the Stony Point area the loss was of the order of 10%. Trace infection was detected in some other orchards.

POWDERY MILDEW (Podosphaera leucotricha). Occasional instances of severe infection were noted throughout the State. The disease was present in most orchards, especially on the Jonathan variety. It was much more prevalent than usual in coastal orchards.

DIEBACK (? Dothiorella sp.) The limb canker phase of this complex was not apparent, but blighting of spurs and cankering of current season shoots was again severe, especially in the Dural section of the Hills district (M.A.).

McINTOSH RED TRUNK CANKER (? Dothiorella sp.) was of no consequence this season.

RIPE ROT (Glomerella cingulata) caused heavy losses in some orchards in the Hills district (M.A.) especially in the varieties Willie Sharp, Alfriston and Kirk's Carrington. Heavy infection was also recorded in Granny Smith at Camden. (M.A.)

PINK LIMB BLIGHT (Corticium salmonicola). One old tree (Carrington) was killed and one severely damaged by this disease at Pennant Hills (M.A.)

WATERLOGGING. Many apple trees growing in low lying or poorly drained orchards at Bathurst (C.T.), Orange (C.T.) and in the Metropolitan Area, died following prolonged waterlogging during the Winter and early Spring. Occasional trees in many other localities also succumbed.

ROOT ROT (Sclerotium rolfsii). About 1% of one year old apple trees in a nursery at Ermington (M.A.) were affected by this disease.

HEART ROT (Schizophyllum commune) was noted on old and damaged trees in a number of districts.

YELLOW WOOD ROT (Polystictus versicolor) was noted on occasional trees throughout the State.

WATER CORE (physiological) was of fairly general occurrence this season.

BITTER PIT (physiological) was observed to some degree in most orchards, in a wide range of varieties.

JONATHAN SPOT (physiological) occurred at Wamoon (M.I.A.)

SOOTY BLOTCH (Gloeodes pomigena) was much more prevalent than usual, especially in the Hills District (M.A.)

LITTLE LEAF (Zinc deficiency) was recorded at Dural and Glenorie (M.A.) and at Kentucky (N.T.)

INTERNAL BARK NECROSIS or MEASLES (Manganese toxicity). Symptoms are still in evidence in a block of Delicious trees at Orange (C.T.). Somewhat similar symptoms have also been observed on a few Delicious trees in an orchard at Bathurst (C.T.)

FLECK (Fabraea maculata). Severe infection of apple seedlings occurred at Narara (C.C.)

MOSAIC (Virus) occurred on many trees, notably Jonathan, throughout the State, but appears to have had no deleterious effect upon the trees.

PEAR.

BLACK SPOT (Venturia pyrina) occurred in epiphytotic proportions at Batlow (S.W.S.), Orange (C.T.) and to a slightly lesser degree in many other areas throughout the State. Trace infection was observed at Leeton (M.I.A.)

FLECK (Fabraea maculata). Heavy infection occurred in a nursery at Narara (C.C.). The variety Winter Cole was reported to have shown considerable resistance in contrast to neighbouring varieties. Heavy infection was also observed in nurseries in the Metropolitan Area. All trees and stocks, except Calleryana stock, were badly defoliated by February.

WATERLOGGING. Occasional trees died out in situations where flooding during the Winter and Spring was particularly prolonged, but generally pears survived this adverse period to a greater extent than any other deciduous fruit tree.

QUINCE.

FLECK (Fabraea maculata) was extremely severe on trees in all parts of the State. Trees were defoliated by mid-Summer and in many instances the new growth was so severely infected that a second premature defoliation occurred. The disease was recorded for the first time on the M.I.A. where premature defoliation also occurred to a serious degree. Trees in nurseries within the Metropolitan Area were heavily attacked but one nurseryman is using a strain of quince which appears to be immune.

LIME INDUCED CHLOROSIS (Iron deficiency) was recorded at Griffith (M.I.A.)

STONE FRUITS.

The stone fruit yield was below normal this season due largely to heavy losses caused by brown rot and rust and to the extensive mortality which followed the prolonged period of waterlogging occasioned by the unprecedented Winter rains.

ALMOND.

SHOT HOLE (Clasterosporium carpophilum) was of general occurrence on the M.I.A. and at Young (S.W.S.). Infection in the Wagga district (S.W.S) was much heavier than usual.

RUST (Puccinia pruni-spinosae) was recorded on the M.I.A.

APRICOT.

BACTERIAL CANKER (Pseudomonas syringae). The incidence of infection on the M.I.A. was rather low this season, but in other parts of the State infection was somewhat more general.

BROWN ROT (Sclerotinia fructicola). Some blossom blighting and infection of green fruit was observed on the M.I.A. but infection of the mature fruit was negligible. Blossom blighting in the East Kurrajong district (C.T.) was very severe and caused a big reduction in crop. The disease was reported from Wentworth (W.D.) where it has not been seen for many years. Early maturing varieties in coastal districts were heavily infected.

SHOT HOLE (Clasterosporium carpophilum). On the M.I.A. infection was very heavy, appearing on the young fruits before and at shuck-fall. However, the scabs flaked off before harvest. Instances of heavy infection were recorded throughout the State. In coastal districts the attack was very severe.

FRECKLE (Cladosporium carpophilum). Infection was again severe in early maturing varieties grown in coastal districts.

BLACK HEART (Verticillium dahliae). Losses, particularly with young trees, are still occurring on the M.I.A. The disease was again recorded at Wentworth (W.D.)

RUST (Puccinia pruni-spinosae). Infection was very severe on early maturing varieties in the Hills District (M.A.) and premature defoliation was followed by Autumn blossoming.

FRUIT ROT (Botrytis cinerea). Heavy infection occurred in some coastal orchards. The fungus invaded the

dying flower remnants and progressed into and destroyed the young fruits. This type of infection was also noted at Orange (C.T.) and Young (S.W.S.)

SHOOT BLIGHT and FRUIT ROT (Sclerotinia sclerotiorum). Infection of young fruit was general through the Windsor-East Kurrajong area (M.A.), occasional shoots being killed.

WOOD ROT (Polystictus versicolor) was observed in old orchards at Leeton (M.I.A) and at Bathurst (C.T.)

LEAF CURL (Taphrina deformans). Occasional specimens were observed at Leeton (M.I.A) and at East Kurrajong (C.T.)

INTERNAL BREAKDOWN (non parasitic) was fairly prevalent on the M.I.A. this season.

LIME INDUCED CHLOROSIS (Iron deficiency) was recorded at Griffith (M.I.A.)

WATERLOGGING. Many apricot trees, and particularly those on peach stock, succumbed to the effects of waterlogging following the Winter rains. The greatest mortality occurred on the heavier soils of the Metropolitan Area.

CHERRY.

BACTERIAL CANKER (Pseudomonas syringae) was again a serious problem in the establishment of young cherry orchards, especially in the Orange district (C.T.)

BROWN ROT (Sclerotinia fructicola). Blossom blighting was of sufficient intensity to reduce the crop a little. In the earlier maturing varieties, which cracked in the rain, infection was heavy, but the later maturing varieties largely escaped the disease.

BLOSSOM BLIGHT (Botrytis cinerea). This fungus was associated with a large proportion of blighted blossoms in the Orange district (C.T.)

CHERRY LEAF SPOT (Coccomyces hiemalis) occurred in one more nursery this season, but has not been detected in any cherry orchards.

SHOT HOLE (Clasterosporium carpophilum) was of widespread occurrence.

LEAF SPOT (Cercospora circumcissa) was recorded from all cherry growing districts, but the degree of infection was not serious.

RUST (Puccinia pruni-spinosae) was recorded on one Mazzard cherry stock growing in a bed of 1000 stocks comprising Mazzard, Mahaleb, and Kentish, at Galston (M.A.)

CRACKING OF FRUIT was general in early maturing varieties.

WATERLOGGING. Approximately 4,000 cherry trees (some of which were 50 years old) died in low lying situations in the Orange district (C.T.) following a prolonged period of waterlogging during the Winter.

NECTARINE.

BROWN ROT (Sclerotinia fructicola) caused little loss in tableland and inland areas, because of dry weather during the ripening period. On the coast infection was heavy.

LEAF CURL (Taphrina deformans). Except on the coast, an epiphytotic of this disease occurred throughout the State wherever control measures were neglected or imperfectly applied. In coastal orchards the incidence of leaf curl was much lower than anticipated.

RUST (Puccinia pruni-spinosae). Infection was more severe than usual at Orange (C.T.) and some premature defoliation occurred. At Young (S.W.S.) there was a serious degree of fruit infection amounting to 50% of the fruit in some orchards.

FRECKLE (Cladosporium carpophilum). Infection was heavier than usual in coastal districts wherever control measures were neglected.

CROWN GALL (Agrobacterium tumefaciens) caused little trouble in nurseries this season.

SHOT HOLE (Clasterosporium carpophilum) was of general occurrence on leaves.

WATERLOGGING was responsible for heavy mortality in orchards in the eastern half of the State. The greatest losses occurred at Orange (C.T.) and on the heavier soils in the Metropolitan Area.

PEACH.

BROWN ROT (Sclerotinia fructicola). An epiphytotic of this disease occurred in all coastal areas. Early maturing varieties sustained very heavy losses. Drier weather in December allowed the harvesting of the mid-season varieties with lighter losses from brown rot, but with the onset of heavy rains again in January the late maturing varieties were almost a total loss. In Tableland areas the dry mid-summer period allowed harvesting to proceed with practically no losses from brown rot. On the M.I.A. there was a moderate degree of infection in the earliest of the canning varieties, but as the season advanced the brown rot incidence fell to negligible proportions.

RUST (Puccinia pruni-spinosae). An epiphytotic of rust occurred on the M.I.A. and in coastal districts while in Tableland areas and districts on the South Western Slopes the incidence was higher than usual and the infection occurred earlier than usual. On the M.I.A. less than two

thirds of the anticipated crop was harvested, and much of the fruit accepted by canneries was below first grade. Good control was achieved where the recommended spray programme was followed. Of the standard canning varieties on the M.I.A., Phillips' Cling was the least susceptible with an estimated average fruit infection of 10% to 15%. Infected fruit on Golden Queen and Pullar's Cling amounted to approximately 50%. The new variety Boyce was consistenty found to be free of rust even when surrounded by heavily infected trees. The first rust lesions on fruit on the M.I.A. were observed on 28th November.

LEAF CURL (Taphrina deformans). In coastal areas the incidence of this disease was unexpectedly low, but in tableland districts infection was heavy and shoot invasion common, wherever control measures were neglected or inadequately applied.

CROWN GALL (Agrobacterium tumefaciens). The incidence of crown gall in the nurseries in the Metropolitan Area was very low this year. In many nurseries there was practically no infection, and nowhere was the loss greater than about 5%.

FRECKLE (Cladosporium carpophilum). Infection in unsprayed orchards in coastal districts was high, but the disease was effectively controlled where the recommended spray programme was applied. A mild attack was observed at Orange (C.T.) where this disease usually does not occur.

SHOT HOLE (Clasterosporium carpophilum) was prevalent throughout the State, being particularly severe in some unsprayed coastal orchards. On the M.I.A. the disease caused less damage to fruit than last season. In the areas where the infection was heaviest last season growers applied sprays and some removed neglected headland almonds which were acting as sources of inoculum.

ROOT ROT (Phytophthora cinnamomi). In nurseries in the Metropolitan Area many thousands of peach stocks and worked trees died following the January rains (about 18" over a period of two weeks). Phytophthora cinnamomi was isolated from the roots of these trees. Mortality occurred only in situations where the drainage was poor.

WATERLOGGING. It is estimated that more than one hundred thousand peach trees died throughout the eastern half of the State following a protracted period of waterlogging resulting from excessive winter rains. The greatest mortality occurred on the heavy soils of the Metropolitan Area where drainage was impeded by the rather impervious subsoil. In one district, Orchard Hills (M.A.), an entire settlement of some 250 acres was virtually wiped out. No pathogen could be isolated from the roots of dead and dying trees.

POWDERY MILDEW (Sphaerotheca pannosa) again occurred in an orchard at Stanbridge (M.I.A). Whereas infection was of the order of 80% on this block only trace infection could be found in other orchards throughout the Murrumbidgee Irrigation Areas.

INTERNAL BROWNING (non parasitic) was of importance in one variety only (Peak) on the M.I.A. This variety matured at the end of January.

WATER SPOT (non parasitic) was again found in a few fruits on the M.I.A., but was not of any economic importance.

MANGANESE DEFICIENCY symptoms were observed at Epping (M.A.)

LIME INDUCED CHLOROSIS (Iron deficiency) was recorded at Griffith. (M.I.A)

BORDEAUX MIXTURE SPRAY INJURY occurred on the M.I.A. in orchards where a spray of 2.2.100.½ strength, applied in October for rust control, was followed immediately by rain. Foliage injury and subsequent leaf fall was very severe.

PLUM.

BROWN ROT (Sclerotinia fructicola) caused very heavy losses of fruit in coastal districts and shoot infection resulted in considerable dieback. In tableland areas infection was negligible.

RUST (Puccinia pruni-spinosae) caused premature defoliation throughout the State, except on prunes at Young (S.W.S.) where infection was light. In the Metropolitan Area infection was very severe, especially on Santa Rosa and Wilson. Narrabeen seemed to have some resistance while Sultan Blood appeared to be almost immune. On the M.I.A. the season was conducive to rust infection but the incidence was kept to a minimum by the widespread use of foliage sprays of Bordeaux mixture 2.2.100.½.

PRUNE DIEBACK (cause undertermined), was not so conspicuous on the M.I.A. this season. This is attributed to the fact that in most orchards the trees were not defoliated by rust and consequently were less subject to sunscalding and subsequent invasion by weak pathogens such as Cytospora sp.

SHOT HOLE (Clasterosporium carpophilum) caused a great deal of foliage injury in coastal and tableland districts. In prunes on the Murrumbidgee Irrigation Areas this disease did not cause much damage. At Young (S.W.S.) infection was somewhat heavier.

CROWN GALL (Agrobacterium tumefaciens) caused little trouble in nurseries this season.

PLUM POCKETS (Taphrina pruni) was again recorded in the Blue Mountains area, this time from Katoomba (C.T.)

WATERLOGGING. Plums on plum stock withstood the wet conditions of last Winter and Spring fairly well. Many plum trees succumbed, but most of these were on peach stock.

FRUIT ROT (Botrytis cinerea). At Young (S.W.S.) this fungus invaded the dying flower remnants and where these

remained in contact with the developing fruit the latter were invaded also.

TROPICAL FRUITS.

BANANA.

BUNCHY TOP (virus). Records compiled by the Division of Horticulture show a continued decrease in the incidence of this disease. The number of affected plants found and destroyed during the year was 3,831 compared with 5,385 for the preceding year; the percentage of bunchy top in the present State acreage of 26,198 being 0.15%. No bunchy top was detected in the Clarence and Yarrahappini (N.C.) areas. The last occurrence in Yarrahappini was on 16.4.1947, but in order to avoid the expense of inspection in this district steps are being taken by the Banana Growers' Federation to purchase and destroy all plantations in which there has ever been an outbreak of the disease.

LEAF SPOT (Cercospora musae) caused heavier losses than usual to fruit quality and bunch weights. Losses were heavy even in sprayed plantations because frequent rains interfered with spraying routines. More growers, however, are adopting spraying for the control of this disease.

SQUIRTER (Nigrospora sphaerica). The few outbreaks of this disease which occurred took place in March prior to the period when dipping of fruit in salicylanilide before despatch to market is compulsory.

CUSTARD APPLE.

LEAF SCALD, DIEBACK and BROWN ROT (Phytophthora sp.) appeared again this year in the plantations at Banora Point (N.C.) in which it was reported in 1948.

PAPAW.

CRINKLE (virus). This disease was again general in North Coast plantations, but incidence of dieback during Summer months was unusually low. It is not yet known whether dieback is related to the crinkle disease.

PASSIONFRUIT.

BROWN SPOT (Alternaria passiflorae) caused defoliation in unsprayed plantations and its control in sprayed plantations was interfered with by frequent rains.

FRUIT ROT (Botrytis cinerea). There was an outbreak of this disease in December at Lapstone (M.A.). Infection of the fruit appeared to have progressed from invasion of flower remnants.

SEPTORIA LEAF and FRUIT SPOT (Septoria passiflorae) In April heavy fruit infection occurred at Kulnura in an unsprayed plantation. In young fruit the infection took the form of small circular to irregular watersoaked spots which later became depressed. Some of the spots coalesced, forming irregular superficial lesions resembling a bruise or rub. Pycnidia formed early in these areas. In some fruits the superficial lesions involved all or most of the fruits which were extensively dotted with pycnidia.

WOODINESS (Virus). This disease is widespread in all plantations as they age and contributes greatly to shortening the productive life of plantations.

PINEAPPLE.

WILT (cause undetermined). This disease again caused losses in late Spring and early Summer in most old plantings, particularly in heavier soils. The disease is believed to be caused by attack of the roots by Phytophthora cinnamomi, but this has not been established.

MISCELLANEOUS FRUITS.

GRAPES.

DOWNY MILDEW (Plasmopara viticola). For the second year in succession this disease appeared in epiphytotic proportions in coastal vineyards, and continuous wet Spring weather made spray applications difficult. The harvest, particularly in the Hunter River district (C.C.) was much reduced in consequence. Because of unusual Spring rains the disease again appeared throughout the North-West plains and the northern section of the Central-West plains and the Western Division, causing defoliation and fruit attack. Earliest appearance was noted on 21st September on the Hunter River, which constitutes a record.

In the Central Western slopes division downy mildew made its appearance early but was adequately controlled and little development took place after December. In the Murrumbidgee Irrigation Area also, continuous moist showery weather during October and November necessitated frequent spraying. In some late flowering varieties, bunches were attacked, with consequent reduction of yield.

Downy Mildew appeared during the late Spring in several lower Murray River (W.D.) settlements, but weather conditions did not favour it and no heavy development was noted.

BLACK SPOT (Elsinoe ampelina). Cool moist Spring conditions in most parts of the State favoured the development of black spot on susceptible varieties and very heavy damage was reported from coastal localities, and localities in the Northern tablelands, North West slopes and Central Tablelands. In the M.I.A. and at Koraleigh (W.D.) susceptible cane pruned varieties (Sultanas and Ohanez) showed heavy infection.

POWDERY MILDEW (Uncinula necator) was unimportant in Lower Murray River (W.D.) vineyards this season. It was reported from the Metropolitan Area.

STUNT (Virus disease of Black Shiraz) was reported from an additional vineyard in the Griffith area (M.I.A.). The disease is now present in four vineyards.

DYING VINES (Suspected virus). This disease caused sporadic losses of sultanas in the Murray River settlements (W.D.) particularly at Koraleigh. At Koraleigh a few vines of Gordo Blanco and Waltham Cross were also affected and at Griffith (M.I.A.) twelve vines in an acre block of Ohanez showed symptoms of the same disease. The vines died following death of bark and wood in a zone at ground level. In sultanas death follows rapidly, but other varieties take 2 - 3 years to die. No pathogen has been implicated.

LEAF SCORCH (Suspected potash deficiency). Vines in a Cessnock (C.C.) orchard severely affected with leaf scorch have responded to soil applications of potash. First applications were made in December, 1948 but definite response did not occur until Spring, 1950.

LOQUAT.

FLECK (Fabraea maculata) was recorded on neglected trees in a nursery at Northmead (M.A.) and on trees in an orchard at North Ryde (M.A.).

MULBERRY.

LEAF SPOT (Septogloeum mori). Severe infection was recorded on English Mulberry throughout the State.

BACTERIAL BLIGHT (Pseudomonas mori) was of widespread occurrence.

ROOT ROT (Cause undetermined) occurred at Gosford and Wyong (C.C.) where yellowing and defoliation were common.

OLIVE.

ROOT ROT (Phytophthora cinnamomi) was recorded from Wagga. (S.W.S.)

FRUIT ROT (Gloeosporium sp.) occurred in ripe fruit at Penrith (M.A.)

PECAN.

ROOT ROT (Cause undetermined) occurred in seedlings (1 - 2 years old) under very wet conditions in a nursery at Narara (C.C.)

STRAWBERRY.

CRINKLE and YELLOW EDGE (Virus) were prevalent.

LEAF DISEASES (Mycosphaerella fragariae, Diplocarpon earliana and Dendrophoma obscurans) occurred on susceptible varieties during the Spring in coastal and inland districts. Dendrophoma infection was responsible for heavy stolon and fruit stalk infection in the varieties Phenomenal and Weston at Carlingford and Baulkham Hills (M.A.)

WILT (Rhizoctonia solani) was reported from Leeton (M.I.A.)

GREY MOULD (Botrytis cinerea) was reported on fruit from Leeton (M.I.A.) and a number of coastal localities.

WALNUT.

BACTERIAL BLIGHT (Xanthomonas juglandis) was of general occurrence.

ORNAMENTALS.

ANTIRRHINUM.

SHOT HOLE BLIGHT (Heteropatella antirrhini) was again prevalent and destructive in the Metropolitan Area during Autumn, 1951.

ANTHRACNOSE (Colletotrichum antirrhini) caused damage to young plants in several commercial flower farms in the Metropolitan Area during late Spring, 1950.

DOWNY MILDEW (Pernospora antirrhini) was reported from several metropolitan localities in early Spring, 1950 on seedlings.

ASPIDISTRA LURIDA.

RING SPOT (? Tomato Spotted Wilt Virus) was reported on this host from Dubbo (C.W.S.)

ASTER.

FUSARIUM WILT (Fusarium oxysporum callistephi) caused considerable losses in a number of Metropolitan crops during early Autumn, 1951. It is evident that wilt resistance has not been maintained in the main varieties now grown. This agrees with a New Zealand report that so-called wilt-resistant varieties from Australia proved susceptible when grown under test conditions in New Zealand, and similar reports from California on Californian grown seed.

GREENING (Tomato Big Bud Virus) was recorded from Springwood (C.T.) and a number of Metropolitan localities. It was, in general, much less prevalent than in the previous two seasons, but in one crop at Berowra (M.A.) a lost of 1/3rd of a 10,000 plant crop was reported in February.

AZALEA.

LEAF GALL (Exobasidium vacinii) was prevalent on susceptible varieties in the Metropolitan Area throughout the Spring. It was also reported from Nowra (S.C.), Newcastle district (C.C.), Bathurst (C.T.) and Mullion Creek (C.T.)

COLLAR and ROOT ROT (Phytophthora cinnamomi) caused an overall loss of about 50% of nursery stock in a Kurrajong Heights (C.T.) nursery. Considerable varietal differences in susceptibility were evident. The variety Exquisite is particularly susceptible.

LEAF SPOT (Cercospora sp.) caused some defoliation of susceptible varieties in a Kurrajong Heights (C.T.) nursery.

CHLOROSIS (Insufficiently acid soil) was reported from a number of Metropolitan localities.

BIRCH.

LEAF SPOTS (Gloeosporium betularum and Cylindrosporium betulae) were reported, causing very early defoliation of birches in the Metropolitan Area, Central and Southern Tablelands and Armidale (N.T.).

BOUVARDIA.

GREENING (Tomato Big Bud virus) was reported for the first time in New South Wales on this host from Kotara (C.C.)

CALENDULA.

RUST (Puccinia distincta) was again prevalent.

LEAF SPOT (Entyloma sp.) was much more general than usual during late Autumn and Winter in Metropolitan localities.

CALLA, YELLOW.

SOFT ROT (Pseudomonas aroideae) was reported from Epping (M.A.).

CAMELLIA.

ROOT ROT (Phytophthora cinnamomi) continued to cause losses of established trees in Metropolitan and Kurrajong Heigts (C.T.) nurseries, following excessive Winter and Spring rain. Varietal differences in susceptibility were very noticeable. C. sasanqua varieties showed good field resistance, while fimbriata alba, otome and triumphans are very susceptible.varieties.

CANKER (Glomerella cingulata) caused heavy losses of susceptible varieties during the Summer in a Metropolitan nursery.

LEAF GALL (Exobasidium camelliae) was recorded from a Metropolitan home garden.

CARNATION.

WILT (Fusarium dianthi) was unusually prevalent over the Summer and Autumn when the weather was relatively dry, and caused very heavy losses in commercial crops in the Metropolitan Area.

COLLAR ROT (Rhizoctonia solani) caused minor losses in crops at Port Macquarie (C.C.), Leeton (M.I.A.) and the Metropolitan Area during Autumn.

LEAF SPOT (Septoria dianthi) was reported from several Metropolitan crops.

ROOT KNOT (Heterodera marioni) was prevalent on susceptible varieties. Some white varieties are resistant.

CHRYSANTHEMUM.

LEAF NEMATODE (Aphelenchoides ritzema-bosi). Losses were moderate to very heavy in unsprayed crops and in home gardens. Sprays of E.605 were applied by many growers and gave very good control.

LEAF SPOT and RUST (Septoria chrysanthemella and Puccinia chrysanthemi) were prevalent and destructive on susceptible varieties.

STUNT (? Canadian stunt mottle) was observed in a number of crops, causing deterioration of quality of blooms and stunting. The variety William Turner in particular is useless commercially when infected with this disease. It is thought that a number of varieties carry it in a mild or symptomless form.

ROOT AND STEM ROT (Cause undetermined). Very heavy losses of plants were experienced by commercial growers following unprecedentedly wet conditions during Winter and Spring, 1950.

CUPRESSUS.

CANKER (Monochaetia unicornis) was recorded for the first time in New South Wales, though it has undoubtedly been present for some years. Cankers and twig blight caused considerable damage to trees, particularly of Cupressus sempervirens in the Metropolitan Area.

ROOT ROT (Cause undetermined) was the cause of death of trees in the Metropolitan Area, Wingham (C.C.) and Dubbo (C.W.S.)

CYMBIDIUM.

MOSAIC (Virus) was noted from a number of sources.

LEAF SPOT (Colletotrichum orchidacearum) was reported by several Metropolitan growers.

DAFFODIL.

BASAL ROT (Fusarium bulbigenum) was recorded from Mt. Wilson, and Leura (C.T.).

MOSAIC (Virus) was widespread as usual.

NEMATODE (Anguillulina dipsaci) was recorded from Mt. Wilson.(C.T.)

DAHLIA.

STUNT (Dahlia Stunt Virus). During the past three years this disease has spread very rapidly and is now the most important cause of deterioration in commercial crops and home gardens. Many nursery stocks are heavily infected.

LEAF SPOT (Entyloma dahliae) appeared at an unprecedentedly early stage (November) in Metropolitan crops and caused considerable defoliation following wet Spring weather. It was well controlled with copper sprays.

SPOTTED WILT (Tomato spotted wilt virus). General but of minor importance.

POWDERY MILDEW (Oidium sp.) developed during late Summer and Autumn.

SCLEROTINIA ROT (Sclerotinia sclerotiorum) was reported from Port Macquarie (C.C.). In the Metropolitan Area it was of very minor importance because of dry conditions during Autumn.

ROOT KNOT (Heterodera marioni) was recorded from the Metropolitan Area.

BLACK STREAK (? Virus) was recorded from Narrandera (R.)

DELPHINIUM.

POWDERY MILDEW (Erysiphe polygoni) was recorded from a Metropolitan crop in the early Autumn.

FRENCH MARIGOLD.

GREENING (Tomato big bud virus) was reported for the first time on this host in New South Wales from a Metropolitan seed crop.

GARDENIA.

CHLOROSIS (Insufficiently acid soil) was reported from several Metropolitan localities.

GLADIOLUS.

CORE ROT, LEAF and FLOWER SPOTTING and NECK ROT (*Botrytis gladiolorum*). Leaf spotting and flower marking and some neck rot were prevalent in coastal districts in early Spring and late Autumn crops. Corm rots were less troublesome than in the previous year because of dry conditions at lifting during Summer and early Autumn.

BROWN ROT (*Fusarium oxysporum* var. *gladioli*) caused very heavy losses of Picardy and Corona in a Schofields crop (M.A.). Corms of an Autumn crop showed considerable infection at lifting in late June. It was also reported from Liverpool (M.A.) and other Metropolitan localities.

PENICILLIUM ROT (*Penicillium gladioli*) caused heavy losses of the susceptible variety Corona at St. Ives (M.A.) and Bangalow (N.C.). Losses were also reported in other varieties from Leura (C.T.), the Metropolitan Area, and Corowa (R.)

HARD ROT (*Septoria gladioli*) was reported from several Metropolitan crops.

DRY ROT (*Sclerotinia gladioli*) was reported from Metropolitan and Central Tableland crops, but caused minor corm blemish only in most cases.

SEVERE MOSAIC (Virus) was reported from Grafton (N.C.) and the Metropolitan area, causing breaking in flower colour.

RING SPOT (Cause not known) was reported from several Metropolitan localities.

SCAB (*Pseudomonas marginata*) was reported from many localities. The neck rot condition occurred in an Autumn crop at Murwillumbah (N.C.)

HIBISCUS.

ROOT ROT (Cause not determined) was responsible for death of plants in the Metropolitan Area following excessive Winter and Spring rains.

HOLLY.

BRANCH BLIGHT (*Corticium salmonicolor*) was recorded for the first time in New South Wales on this host from Grafton. (N.C.)

HYACINTH.

BULB ROT (Bacteria associated). Fairly numerous cases of bacterial break down were recorded from Metropolitan and Central Tableland localities. In all cases the condition appeared to have followed injury caused by bulb mites.

HYDRANGEA.

POWDERY MILDEW (Oidium sp.) was reported from several Metropolitan localities in the late Spring.

ICELAND POPPY.

SPOTTED WILT (Tomato spotted wilt virus) was reported from Leeton (M.I.A.). In the Metropolitan Area it developed to only a limited degree and caused little loss.

DOWNY MILDEW (Peronospora arborescens) occurred in a few Spring crops in the Metropolitan Area.

IRIS.

LEAF SPOT (Heterosporium gracile) was general in Metropolitan gardens.

MOSAIC (Iris mosaic virus) was prevalent on Dutch Iris.

RHIZOME ROT (Phytophthora sp.) caused losses in several Metropolitan gardens during Summer.

JACARANDA.

SEEDLING BLIGHT (Phytophthora cinnamomi). Shoot blight and root rot were responsible for heavy losses amongst seedling jacarandas in Metropolitan nurseries.

LAGERSTROEMIA (Crepe Myrtle)

POWDERY MILDEW (Unicinula australiana) was recorded from a number of Metropolitan and Central Coast localities and from Delungra (N.W.S.)

ROOT ROT (Cause not determined) was responsible for death of plants in the Metropolitan Area following excessive Winter and Spring rains.

LANTANA.

ROOT ROT (Cause not determined) was responsible for death of plants in the Metropolitan Area following excessively wet Winter and Spring conditions.

LARKSPUR.

POWDERY MILDEW (Erysiphe polygoni) was recorded from a Leeton (M.I.A) garden.

LAUREL (Prunus lauro-cerasus)

ROOT ROT (Cause not determined) caused death of trees at Bowral, Moss Vale and Robertson (S.C.) following excessive Winter rains.

LILAC.

ROOT ROT (Cause not determined) was responsible for death of lilacs following excessively wet Winter and Spring conditions at Warrimoo (C.T.) and St. Ives (M.A.)

LEAF SPOT (Phyllosticta sp.) was reported from Lithgow (C.T.)

LILY.

MOSAIC (Virus) was recorded from a number of Metropolitan localities and from Hay (R.)

LIME. (Tilia sp.)

LEAF SPOT (Cercospora microspora) was recorded from Rydal (C.T.)

LOPHOSPERMUM ERUBESCENS

COLLAR ROT (Phytophthora sp) was recorded from a Metropolitan garden.

MAGNOLIA FUSCATA.

ROOT ROT (Cause not determined) was responsible for the death of plants in the Metropolitan Area and at Kurrajong (C.T.) following excessive Winter and Spring rains.

OLEANDER.

BACTERIAL GALL (Pseudomonas savastonoi) was recorded from a Metropolitan garden.

PELARGONIUM.

RUST (Puccinia pelargonii-zonalis) was prevalent in the Metropolitan Area and country districts.

PEONY.

BUD BLIGHT (Botrytis cinerea) was reported from Mt. Wilson (C.T.) on a variety susceptible to balling, during wet weather.

PHLOX.

LEAF SPOT (Septoria divaricata) was reported from a number of Metropolitan localities during Spring and early Summer.

GREENING (Tomato big bud virus) was reported from the Metropolitan Area on Phlox divaricata.

PHOTINIA SERRULATA.

MILDEW (Oidium sp.) was recorded in the Metropolitan Area.

POLYANTHUS.

LEAF SPOT (Ramularia primulae) was recorded from Armidale (N.T.)

POPLAR.

LEAF SPOT (Gloeosporium populi) was recorded in the Metropolitan Area.

ROOT ROT (Cause not determined) of Populus nigra was noted at Glenfield and St. Ives (M.A.) following excessive Winter rains.

CANKER (Pseudomonas rumaefaciens) was detected in stocks of Populus trichocarpa imported from British Columbia at Wagga city gardens (S.W.S). All trees were destroyed and the disease has not been detected in any other locality to which this species was distributed.

PROSTANTHERA.

ROOT ROT (Cause not determined) was reported from many coastal localities following excessive Winter rains.

PYRACANTHA.

BLACK SPOT (Venturia pyracanthae) was reported from Goulburn (S.T.)

RAPHIOLEPIS (Indian Hawthorn)

FLECK (Fabraea maculata) was recorded in the Metropolitan Area.

ROSE.

BLACK SPOT (Diplocarpon rosae). Heavy Spring infection resulted in severe defoliation on Coast and Tablelands and was recorded also from localities in the North-West slopes and Murrumbidgee Irrigation Areas. Further defoliation occurred in the late Autumn on the Coast and

and Tablelands. Considerable weakening and die-back has resulted of the more susceptible varieties.

POWDERY MILDEW (Sphaerotheca pannosa) was general on the Coast, Tablelands and Slopes during Summer and early Autumn.

BALLING (Botrytis cinerea) Susceptible varieties. were badly affected during late Spring on the Coast and Tablelands.

ROWAN.

ROOT ROT (Cause not determined) was recorded from a number of Metropolitan localities and from the Central tablelands, Armidale (N.T.) and Uralla (N.T.), following excessive Winter rains.

SHASTA DAISY.

GREENING (Tomato big bud virus) was reported from Coast and Tableland localities.

WILT (Verticillium dahliae) caused very severe losses in a Metropolitan flower farm during late Spring.

SWEET PEA.

SPOTTED WILT (Tomato spotted wilt virus) was reported from several Metropolitan localities in late Autumn, causing minor losses.

LEAF MOULD (Hyalodendron album) was reported from a number of Metropolitan home gardens during early Spring, 1950.

VIOLET.

SCAB (Sphaceloma violae) was serious throughout the season in Coastal crops.

VIRGILIA.

ROOT ROT (Cause not determined) was responsible for the death of many specimens in the Metropolitan Area following excessive Winter rain.

WATSONIA.

LEAF and FLOWER SPOT (Botrytis gladiolorum) caused severe belmishing during the unusually wet conditions of early Spring.

WILLOW (Salix babylonica)

BLACK SPOT (Marssonina salicicola). Heavy foliage infection occurred at Galong (S.W.S.) and at Uralla (N.T.) following unusual Spring rains.

ZINNIA.

POWDERY MILDEW (Oidium sp.) was fairly general in coastal crops from late Summer onwards.

VEGETABLES.

ASPARAGUS.

WILT (Fusarium sp. associated). A wilt condition of asparagus with which a species of Fusarium was found associated was recorded from Tumut (S.T.)

BEAN.

The seed certification scheme was continued for the eighth successive season. A total of 373 acres (91 separate crops) was inspected and 192 acres (51 crops) were passed for certification. It is estimated that the total yield of certified seed will be about 2,700 bushels, of which about 47% will be Brown Beauty. Other varieties certified were Hawkesbury Wonder, Tweed Wonder, Windsor Longpod and Canadian Wonder.

HALO BLIGHT (Pseudomonas phaseolicola). Only one seed crop on the South Coast was rejected because of the presence of halo blight during the past season. This was of the Canadian Wonder variety. This was the first season since the establishment of the certification scheme in the 1943-44 season that no seed crop of the varieties Brown Beauty, Tweed Wonder and Wellington Wonder had been found affected with halo blight. Surveys throughout the year in the Gosford district located only two crops affected with halo blight - one of Tweed Wonder and the other of Wellington Wonder. There was one other record of the disease during the year, from Terranora (N.C.).

ANTHRACNOSE (Colletotrichum lindemuthianum). Anthracnose was again favoured by the wet conditions which prevailed in most bean growing areas for the greater part of the year. As in previous years, anthracnose was responsible for more crop rejections in the seed certification scheme than any other single reason, 21 out of a total of 40 crops rejected being rejected for the presence of anthracnose. Fourteen of these were Brown Beauty, six Hawkesbury Wonder and one Windsor Longpod. Losses were reported in a few Spring crops in the Gosford (C.C.) district and in both Spring and Autumn crops on the North Coast. The disease was also reported to be causing serious losses in bean crops at Glen Innes (N.T.) during the Summer months. Dry conditions prevailed during the late Summer and early Autumn months in the Gosford (C.C.) district and anthracnose was not reported in Gosford Autumn-grown crops.

During the spring months of 1950, anthracnose was found in three crops of the variety Tweed Wonder grown in the Matcham section of the Gosford district. Subsequent investigations showed that a strain of anthracnose different from that commonly occurring in New South Wales was responsible. Glasshouse inoculations showed that this strain can attack Tweed Wonder, Wellington Wonder and certain Brown Beauty selections, all of which are resistant to the common strain of the fungus. Progress was made in building up lines of Brown Beauty containing 100% of plants resistant to the common strain of anthracnose.

ANGULAR LEAF SPOT (Isariopsis griseola). Many records were made of this disease throughout the year, the disease again being most important on late-sown seed crops on the South Coast.

RUST (Uromyces phaseoli typica). Rust was recorded on both dwarf and climber beans from all coastal areas, the new strain of rust capable of attacking dwarf varieties which was first recorded in the 1948-49 season having become firmly established. Professor W.L. Waterhouse of the University of Sydney reports that samples of rust from climbing beans are now predominantly the new strain rather than the two older strains which could attack most of our climbing varieties but not the dwarf varieties. In the Gosford district severe leaf damage was reported in midseason crops but in the spring and autumn crops, rust was generally not present or did little damage. Field trials of the new climbing variety Westralia, produced in Western Australia, showed that variety to be apparently resistant to all strains of rust at present occurring in New South Wales.

AMERICAN COMMON BLIGHT (Xanthomonas phaseoli). One record only of this disease during the year - from Richmond (M.A.).

BACTERIAL BROWN SPOT (Pseudomonas syringae). Several records during the year, mainly on seed crops on the South Coast.

SCLEROTINIA ROT (Sclerotinia sclerotiorum). Recorded on beans forwarded to the Sydney Municipal Markets from the North Coast during the late autumn and early winter months of 1951. Owing to dry conditions in the late summer and early autumn, the disease was of no importance this year in autumn bean crops in the Gosford (C.C.) district and in the Metropolitan Area.

MOSAIC (Virus). Present in most crops but no reports of any high degree of infection or any appreciable reductions in yield. Symptoms suggestive of yellow bean mosaic rather than common bean mosaic were seen in bean crops at Dubbo during April.

MOTTLE LEAF (Non-parasitic). This disease was again present in all Tweed Wonder crops of the "South Coast" strain. Progress was made in building up mottle leaf-free lines of the Tweed Wonder variety and it is hoped that, within two years, the "South Coast" strain of this variety will be completely replaced by strains which are free or practically free from the condition.

SCALD (Molybdenum deficiency). Two records from the Gosford district during the autumn months of 1951. In both cases the growers sprayed their crops with a solution of sodium molybdate and subsequently reported a recovery of affected plants.

FUSARIUM ROOT ROTS AND WILTS (Fusarium spp.). Several records.

BACTERIAL WILT (Corynebacterium flaccumfaciens). One record on the Tweed Wonder variety from Dignam's Creek (S.C.).

RHIZOCTONIA STEM CANKER and ROOT ROT (Rhizoctonia solani). Several records from the Metropolitan Area.

SCLEROTIUM ROT (Sclerotium rolfsii). Several records - from the North Coast, Central Coast and Metropolitan Area.

ASHY STEM BLIGHT (Macrophomina phaseoli). Recorded from Dubbo (C.W.S.)

ROOT KNOT (Heterodera marioni). Recorded from the Metropolitan Area and from Dignam's Creek (S.C.).

ASCOCHYTA SPOT (? Ascochyta boltshauseri). Leaf and pod spotting, similar to that recorded in the 1949-50 season, again occurred on Blue Lake climbing beans at Batlow (S.T.). There was one other record of an Ascochyta leaf spot on beans during the year - from Grafton (N.C.).

PHYLLOSTICTA LEAF SPOT (Phyllosticta sp.). Recorded from Tenterfield (N.T.) and Narooma (S.C.).

MYCOSPHAERELLA LEAF SPOT (Mycosphaerella sp.). A leaf spotting with which a species of Mycosphaerella was found associated was recorded from Dignam's Creek (S.C.).

STEM FASCIATION (Virus?). A condition in which there was a fasciation of the stem tissue and leaf distortion was observed in several crops in the Windsor (M.A).district. A similar condition was seen in bean plants submitted from Taree (C.C.). Sap inoculations from the fasciated plants from Windsor resulted in inoculated plants developing mosaic-like symptoms suggestive of a virus disease. Some of these plants later developed a slight amount of stem fasciation.

WITCHES BROOM (? Tomato big bud virus). Recorded from Leeton (M.I.A.).

MANGANESE DEFICIENCY. Symptoms suggestive of manganese deficiency were seen on plants submitted from Roseville (M.A.).

HORMONE INJURY. Bean plants showing symptoms highly suggestive of injury caused by a hormone type of chemical were submitted from Rhodes (M.A.), not far from a factory manufacturing hormone weedicides.

BEAN, BROAD.

CHOCOLATE SPOT (*Botrytis* sp.). Several records during the spring months of 1950.

RUST (*Uromyces fabae*). Several records.

ROOT ROT (*Rhizoctonia solani*). One record from the Sydney Metropolitan Area.

VASCULAR WILT (Virus). Two records from the Sydney Metropolitan Area.

BEAN, NAVY OR FIELD.

AMERICAN COMMON BLIGHT (*Xanthomonas phaseoli*) was reported to be less prevalent than in previous years.

WEATHER DAMAGE. Very poor stands were obtained in many early-sown crops as a result of excessive rainfall occurring soon after planting. Later in the season some areas of navy beans suffered considerably from wind damage and early frosts.

BEET and SILVER BEET.

CERCOSPORA LEAF SPOT (*Cercospora beticola*). As usual there were many records of this disease, mainly from home gardens in the Sydney Metropolitan Area.

ROOT KNOT (*Heterodera marioni*). Several records.

MOSAIC (Virus). One record from Lindfield. (M.A.).

LEAF NECROSIS (Cause undetermined). A condition in which there was an irregular necrotic network on the leaves was recorded from the Sydney Metropolitan Area. The cause was not determined.

CAPE GOOSEBERRY.

No records.

CARROT.

MOTLEY DWARF (Virus). Several records from the Metropolitan Area.

LEAF BLIGHT (*Alternaria dauci*). Three records from the Sydney Metropolitan Area.

CERCOSPORA LEAF SPOT (*Cercospora carotae*). Three records - from the North Coast.

ROOT CANKER (*Rhizoctonia solani* associated). Recorded on carrot roots from Perthville (C.T.).

CELERY.

LATE BLIGHT (Septoria apii-graveolentis). Several records.

ROOT KNOT (Heterodera marioni). Severe infection was reported in seed beds at Leeton (M.I.A.), almost 100% of the seedlings being affected. The seedlings involved were being grown for the planting of contract crops for the Leeton Co-operative Cannery and, following discovery of the infection, all celery contracts were cancelled by the Cannery.

CRUCIFERS.

BLACK ROT (Xanthomonas campestris). There were many records of this disease on cauliflower, broccoli and cabbage during the year. It was reported that the disease was very prevalent in commercial cauliflower crops in the Bathurst (C.T.) district during the autumn months of 1951. Lack of crop rotation and absence of seed treatment probably contributed to the development of the disease in the Bathurst area.

RING SPOT (Mycosphaerella brassicicola). One record on cauliflower during the year. This was from Newcastle (C.C.) where the disease does not usually occur on either cabbages or cauliflowers. The abnormally wet season undoubtedly contributed towards the development of the disease in this locality. No surveys of cabbage crops in the Moss Vale-Robertson district, where the disease usually causes serious trouble, were made during the year.

DAMPING-OFF, WIRE STEM and ROOT ROT (Rhizoctonia solani). Several records from various parts of the State on cabbage and cauliflower.

WHIPTAIL (Molybdenum deficiency). Recorded on cauliflower at Windsor (M.A.) and Pennant Hills (M.A.). The use of molybdenum compounds in whiptail-liable areas continues to give good results.

SCLEROTINIA ROT (Sclerotinia sclerotiorum). Recorded on Brussels sprouts at Yanco (M.I.A.).

CLUB ROOT (Plasmodiophora brassicae). Three records from the Metropolitan Area during the year.

DOWNY MILDEW (Peronospora parasitica). Several records.

ALTERNARIA LEAF SPOT (Alternaria brassicae). Recorded from Leeton (M.I.A.).

BLACK ROOT OF RADISH (Aphanomyces raphani). Two records - from Roseville (M.A.) and Waverton (M.A.).

PURPLE DISCOLOURATION OF CURDS (Cause undetermined). Two cases of purple curd development in cauliflowers were seen during the past year. The exact cause of this curd pigmentation is not known although it is suspected that it may be due to the effect of light.

BLACKENING OF CURDS (Cladosporium sp. associated). Submitted from Perthville (C.T.).

BLACK RING VIRUS (?). Specimens of cauliflowers showing symptoms suggestive of the black ring virus disease were received for examination from Roseville (M.A.).

HORMONE WEED SPRAY INJURY. Specimens of cabbage from Moss Vale (S.T.) and cauliflowers from two locations in the Metropolitan area showed injury caused by hormone weedicides. Main symptoms were stunting of the plants accompanied by a proliferation of the stem tissue a few inches above ground level to form enlarged gall-like outgrowths.

MOSAIC. Horseradish plants showing symptoms highly suggestive of a virus disease were observed at Pennant Hills (M.A.).

CUCURBITS.

FUSARIUM FOOTROT (Fusarium sp.). This disease, which is apparently the same as that caused overseas by Fusarium solani f. cucurbitae, was responsible for a 25% loss in a crop of pumpkins at Pennant Hills (M.A.). The loss occurred as a result of planting infected seed. An adjoining crop, which had been planted with a different line of seed was free of fusarium foot rot. The disease was also present in plantings of marrows and squashes at North Ryde (M.A.) causing a 5% loss. It was also reported on pumpkins from Taree (N.C.).

Preliminary glasshouse tests showed that plants of the genus Cucurbita were more susceptible to footrot than those of the genera Cucumis or Citrullus.

POWDERY MILDEW (Erysiphe cichoracearum). This disease caused some yield reduction on cucurbits in the Metropolitan Area. A serious loss was recorded on a crop of pumpkins and marrows at Wamberal (C.C.).

MOLYBDENUM DEFICIENCY. Leaf yellowing, due to molybdenum deficiency, was recorded on Early Fortune cucumbers and Long White marrows at Lisarow (C.C.) and on marrows at Fairfield (M.A.).

ANTHRACNOSE (Colletotrichum lagenarium). Affected 5% of a crop of pumpkins which were held in storage or left in the field at Mungle Hill (M.I.A.). This is a new record on pumpkins in this State.

DOWNY MILDEW (Perenoplasmopara cubensis) was recorded on cucumbers at Coffs Harbour (N.C.) and Bodalla (S.C.).

ROOT KNOT (Heterodera marioni). Two records. One on pumpkin from Waverley (M.A.), one on cucumber from Woonoona (S.C.).

DDT BURN (Non-parasitic). Foliage damage on Watermelons at Hawkesbury River (C.C.) and Choko vines in the Metropolitan Area was recorded following the use of DDT sprays.

FASCIATION (Undetermined). Two records, both on cucumber, one from the Botanic Gardens (M.A.), the other from Tamworth (N.W.S.).

LETTUCE.

SPOTTED WILT (Tomato spotted wilt virus). There was only one record of this disease during the year. It occurred in the Murrumbidgee Irrigation Area.

SEPTORIA LEAF SPOT (Septoria lactucae). This disease was recorded from Glen Davis (C.T.) and the Sydney Metropolitan Area.

ROOT KNOT (Heterodera marioni). One record from New Lambton (C.C.).

BACTERIAL LEAF SPOT (Xanthomonas sp.). One record from the Sydney Metropolitan Area.

MOLYBDENUM DEFICIENCY. A report was received from the Sydney Metropolitan Area of a response of lettuce to the application of sodium molybdate.

HORMONE SPRAY INJURY. During May 1951 a small crop of lettuce was seen at Ryde (M.A.) showing unusual symptoms which had apparently been caused by hormone weed sprays applied to weeds about ten yards away. The outstanding feature shown by affected plants was the fusion of the central leaves to form a structure resembling a petunia flower. Some plants also showed excessive root development at the crown of the plant at ground level.

MUSHROOM.

BACTERIAL SPOT (Bacterium sp.) caused moderate damage in a mushroom house at Castle Hill (M.A.).

ONION.

DOWNY MILDEW (Peronospora destructor). Several records from the Metropolitan Area including one on seed stalks in a small onion seed crop at Carlingford (M.A.). The disease was also reported from Bega (S.C.) and the Murrumbidgee Irrigation Area, where it was observed causing severe damage in some commercial plantings in the spring months of 1950.

LEAF MOULD (Stemphylium botryosum). Recorded on seed stalks in an onion seed crop at Leeton (M.I.A.). The leaf mould appeared to have followed an earlier infection by downy mildew. Leaf mould was also recorded following downy mildew at Bega (S.C.).

PARSLEY.

No records.

PARSNIP.

ROOT KNOT (Heterodera marioni). Three records.

LEAF SPOT (Cylindrosporium pastinacae). One record from the Metropolitan Area.

ROOT CANKER (Pythium sp. associated). Parsnips showing root canker with which a species of Pythium was found associated were submitted from Perthville (C.T.).

PEAS.

MYCOSPHAERELLA BLIGHT (M. pinodes) and ASCOCHYTA DISEASES (A. pisi and A. pinodella). Mycosphaerella Blight developed in some of the spring crops on the M.I.A. towards the end of the season and caused severe losses in some cases. In this area the Emperor variety showed severe pod infection following October rains. At the same time the variety C72 was only moderately infected. During the year Mycosphaerella Blight was recorded a number of times from the Metropolitan Area, Coastal areas and Central Tablelands. Ascochyta Footrot (A. pinodella) was recorded from Yanco (M.I.A.) and Narrandera (R.). Ascochyta Leaf and Pod Spot (A. pisi) was recorded from Tamworth (N.W.S.), Bomaderry (S.C.) and Coonabarabran (N.W.P.).

POWDERY MILDEW (Erysiphe polygoni) was of minor importance in spring crops on the M.I.A. Some infection occurred in late August-early September but the infection did not develop further. The disease was also recorded from Rydal (C.T.), Euston (W) and from the Metropolitan Area.

DOWNY MILDEW (Peronospora viciae) was prevalent in crops in the Murrumbidgee Irrigation Area towards the end of September.

ROOT ROT (Rhizoctonia solani). One record from Tumbulgum (N.C.).

BIG BUD (Tomato big bud virus). One record from Yanco (M.I.A.).

PEPPER (CAPSICUM).

No records.

POTATO.

LATE BLIGHT (Phytophthora infestans). This disease was responsible for some losses in coastal spring crops. Plantings of Sequoia at Richmond (M.A.) were severely blighted in December while Sebago plantings in the same area were only moderately infected. Many specimens of blight-affected plants were received from the Metropolitan Area during this period and some from the South Coast. In a spring crop at Kenthurst (M.A.), the varieties Aussie and Satisfaction were severely blighted, Sebago moderately infected and Saranac the least infected.

Up to 50% of some crops on the Northern Tablelands were destroyed by Late Blight. In one trial in this area, the decreasing order of resistance was Adina, Monak and S2524 with Factor, S2513 and Kasota completely destroyed. Losses at Dorrigo and Ebor (N.T.) were severe. In a trial at Ebor (N.T.), Adina, Monak and S2524 were again highly resistant to blight and Sebago and Saranac moderately resistant. Individual records showed a severe loss in a crop of Katahdin at Guyra (N.T.), moderate damage in Katahdin and Manhattan crops at Brockley (N.T.) and some infection in Sebago at Llangothlin (N.T.).

Damage caused on the Central Tablelands was somewhat lighter than during the 1949-50 season. Some blight was present in the Rydal-Oberon area and this increased slightly towards the end of the season. At Orange (C.T.) some tuber infection was observed on digging in April.

Heavy losses in Southern Tableland crops occurred in the variety Factor. Some moderate tuber infection also developed in Sequoia at Crookwell and McAlister (S.T.). In this area also the varieties Adina, Monak and Sebago showed good field resistance to Late Blight.

LEAF ROLL (Virus). On the Northern Tablelands 2.4% of the acreage of seed potatoes submitted for certification was rejected because of excess (greater than 3%) leaf roll infection. Rejection in 1949-50 was 0.4%. 12.9% of the acreage submitted on the Central Tablelands was rejected (21.4% in 1949-50) and 1.9% on the Southern Tablelands, (5.7% in 1949-50).

Leaf Roll infections necessitated some roguing in experimental plots at Glen Innes (N.T.) and some severely infected plants were observed in a crop of Early Manhattan at Guyra (N.T.).

At Crookwell (S.T.) overall leaf roll infections were of the order of 1-2% in crops planted from certified seed. Twenty acres of the varieties Aussie and Mainguy in this district, which had been planted with uncertified seed showed 30-40% infection. The disease was also recorded from Strathfield (M.A.).

BLACKLEG (Erwinia atroseptica). This disease was recorded on the variety Monak at Guyra (N.T.) and on Adina at Black Mountain (N.T.). Both infections were light. Early planted crops of Sequoia at Orange (C.T.) showed some infection. In two crops 6-8% blackleg developed. Less blackleg was present at Crookwell (S.T.) than during the 1949-50 season. The highest percentage infection recorded was 5% in one crop of Sebago. In this area less than 1% infection was recorded in Sequoia crops. Although extensive seed cutting was again necessary with this variety, the soil at planting was much drier than was the case the previous season. Infection in Factor and Mainguy was also less than 1%. Some infection developed in Sebago at Batlow (S.T.).

Spring crops of Sebago and Sequoia on the South Coast were lightly infected. The disease was recorded from Roseville (M.A.). It is noteworthy that in North Coast spring plantings in 1950 no appreciable losses due to blackleg infection were recorded. Conditions were drier than during the 1949 spring planting when severe losses were occasioned by blackleg infection.

EARLY BLIGHT (Alternaria solani).infected most crops towards the end of the growing season and was responsible for some yield reduction.

RHIZOCTONIA DISEASE (Rhizoctonia solani). In the Orange district (C.T.) moderate sclerotial formation on tubers was caused by this disease. The disease also attacked stems and caused some losses at Crookwell (S.T.). A crop of 10 acres of Factor at Narrandera (R.) was fairly severely damaged - undipped seed of unknown origin being used at planting. The disease was also recorded from Moruya (S.C.) and from the Metropolitan area.

COMMON SCAB (Actinomyces (Streptomyces) scabies). Some severe infections occurred in small plantings in the Murrumbidgee Irrigation Area. On the Central Tablelands the drier season favoured fairly severe infection. Overall infections in a scab resistance trial at Spring Hill (C.T.) were higher than last season. Some infection occurred at Crookwell (S.T.) and there were a number of records from the Metropolitan Area.

LATENT MOSAIC (Potato virus X). Although this virus is present in most New South Wales potato stocks, particularly marked symptoms were observed during the year on Adina and Early Manhattan varieties at Guyra (N.T.) and on the variety Cordivina in experimental plantings at Glen Innes (N.T.).

FUSARIUM WILT (Fusarium oxysporum f. tuberosi). Only a few infections in the Tableland crops where growers generally plant potatoes only after 6-8 years continuous pasture. One record from Maitland (C.C.).

BACTERIAL WILT (Bacterium solanacearum). A 2% infection was recorded in a crop at Harbord (M.A.). The disease was also recorded from Murwillumbah (N.C.).

SCLEROTINIA ROT (Sclerotinia sclerotiorum). A trace infection in crops of the varieties Sebago and Adina at Ebor (N.T.).

EELWORM (Heterodera marioni). Records from McAlister (S.T.), Tenterfield (N.T.) and St. Leonards (M.A.).

FUSARIUM DRY ROTS (Fusarium spp.). A number of cases of these rots were observed in grading sheds at Crookwell (S.T.).

BROWN FLECK (Non parasitic). Two seedlings affected in experimental plantings at Glen Innes (N.T.). One seedling S2662 was severely affected; the other C6368 lightly affected.

HOLLOW HEART (Non parasitic). Observed during the year particularly in the varieties Sequoia and Monak and in other varieties and seedlings in experimental plots at Glen Innes (N.T.).

ENLARGED LENTICELS (excessive soil moisture). Prevalent in tubers harvested from crops at Crookwell (S.T.) following last season's rains. Specimens were also received from Robertson (S.C.), Bathurst (C.T.) and Richmond (M.A.).

SECOND GROWTH (non parasitic). Various varieties and seedlings showed this disease at Glen Innes (N.T.). The disease was also frequently observed in the variety Factor.

MILD MOSAIC (Virus). Recorded on plants at Summer Hill (M.A.).

POTATO VIRUS Y. Caused severe necrotic spotting of the Variety Harford in experimental plantings at Glen Innes (N.T.).

WITCHES BROOM (Virus). Recorded from Batlow (S.T.).

SPINDLE TUBER (Virus). Recorded from Batlow (S.T.).

POWDERY MILDEW (Oidium sp.). One record from Balgowlah (M.A.).

FREEZING INJURY (Non-parasitic). A number of tubers of the Factor variety affected at McAlister (S.T.).

GROWTH CRACKS (Non-parasitic). One record from Queenscliff (M.A.).

BLIND OR SPROUT TUBER (Non-parasitic). One record from Kurrajong Heights (C.T.).

BLACK HEART (Non-parasitic). One record from the Metropolitan Area.

HAIR SPROUT (Undetermined). One record from Hobbys Yards (C.T.).

FLABBINESS (Undetermined). Recorded from Finley (R).

RHUBARB.

DOWNY MILDEW (Peronospora jaapiana). Several records.

PHYLLOSTICTA LEAF SPOT (Phyllosticta straminella). Recorded from Moss Vale (S.T.), Glen Innes (N.T.) and Metropolitan Area.

RUST (Puccinia rubella). Three records from the Metropolitan Area.

SWEET POTATO.

? MOLYBDENUM DEFICIENCY. Sweet potato plants showing chlorotic leaves in which the leaf tissue was high in nitrate were seen at Lisarow (C.C.) in October 1950. Cucumbers and marrows on the same farm with similar symptoms responded to applications of sodium molybdate.

TOMATO.

SPOTTED WILT (Tomato spotted wilt virus). Incidence of spotted wilt declined to a new low level this season though thrips counts in selected areas showed that the population of T. tabaci was not greatly lower than last year. Whereas reports of spotted wilt in outdoor crops normally commence in September or early October the first

record this season was on 18th November by which date infection rate is normally near its peak. At Wentworthville, Carlingford and similar localities in the Metropolitan Area where losses of more than 50% are frequently experienced in Spring crops, infection was as low as 5 or 6 plants per thousand. No infection occurred at the Hawkesbury Agricultural College, Richmond (N.S.W.). Less than 1% spotted wilt was observed at Coonabarabran (N.W.P.) and the North Coast was again almost free of the disease. Highest incidence recorded for the State was 2 to 3% in some crops in the Murrumbidgee Irrigation Area where, last year, average infection was 14%. One plant in a plot of approximately 200 Lycopersicon pimpinellifolium X L. esculentum was affected with spotted wilt at Carlingford (N.S.W.).

EARLY BLIGHT (Alternaria solani) caused little damage though the disease was widespread during late summer and autumn months.

FUSARIUM WILT (Fusarium oxysporum f. lycopersicum). This potentially serious disease was again of little commercial importance. Chloropicrin which is rapidly replacing steam as a disinfecting agent is giving good control in glasshouses where Fusarium-susceptible strains of tomato are grown. Growers of early maturing tomatoes which set fruit at low temperatures (chiefly Rouge de Marmande) avoid infection by using land virgin to tomatoes or by practising long term rotation. In coastal districts the variety Grosse Lisse shows a very high field resistance and may be grown in Fusarium infested soil. An occasional breakdown in the resistance of this variety was invariably associated with periods of soil moisture saturation.

BACTERIAL SPOT (Xanthomonas vesicatoria). Reports of the occurrence of bacterial spot were received from all parts of the State except the Murrumbidgee Irrigation Area. The amount of damage caused was considerably less than experienced during the previous two seasons. At Coonabarabran (N.W.P.) all plants of several varieties, being grown for seed purposes, were infected in minor degree though the seed had been treated for 30 minutes in water at 50°C. followed by a three hours soak in Panogen 1/1000. At the Botanic Gardens (N.S.W.) there was no development of bacterial spot on plants that were grown from seed derived from severely spotted fruit last season.

BACTERIAL CANKER (Corynebacterium michiganense). As usual bacterial canker was of widespread occurrence but only a few individual plants in large plots were affected.

LEAF MOULD (Cladosporium fulvum). Leaf mould, which was reported to be attacking young plants in glasshouses in April 1950 continued to increase in severity in Spring and early Summer. In many cases damage to flowers resulted in poor fruit set, and defoliation reduced fruit size. In February-March 1951 damage to outdoor crops was universal and severe in the Metropolitan Area and caused considerable damage at Gosford (C.C.) and Nowra (S.C.). Later crops were much less affected.

ROOT KNOT (Heterodera marioni). Root Knot was reported from numerous localities. Several plants were killed in a clay soil in a warm location at West Ryde (N.S.W.).

SEPTORIA LEAF SPOT (Septoria lycopersici) was more prevalent and destructive than for several years past. It was present throughout the growing season in practically every crop inspected. Reports of severe defoliation together with stem lesions were received from Leeton (M.I.A.), Nowra (S.C.), Coonabarabran (N.W.P.), Carlingford (M.A.), Newcastle (C.C.) and Murwillumbah (N.C.).

BLOSSOM DROP (Non-parasitic). No records.

MAGNESIUM DEFICIENCY. No records.

VERTICILLIUM WILT (Verticillium dahliae). Losses due to this disease were restricted to a few plants in glasshouses in the Warriewood-Mona Vale district (M.A.). There was no record of its occurrence in outdoor crops.

FRUIT ROTS (Various fungi). Considerable losses were recorded from the Metropolitan and more northern areas of the State as the result of fruit infection by Phytophthora infestans and P. parasitica. Ripening and ripe fruit in contact with the ground were attacked during January and February by Sclerotium rolfsii at Pennant Hills (M.A.). There was no attack on the stems. Bacterial watery rots were reported in the field on the North Coast. Records of rots due to Alternaria solani were uncommon. Colletotrichum phomoides was prevalent in late hanging fruit in Autumn.

RHIZOCTONIA ROOT ROT (Rhizoctonia solani). No records.

BLOSSOM END ROT (Non-parasitic) was observed throughout the State but was of no importance.

MOSAIC (Tobacco mosaic virus) was present in all glasshouse crops and in many outdoor crops in the Metropolitan area. Plant reaction was minimal.

BIG BUD (Tomato big bud virus). As usual big bud was prevalent in inland districts; 10% incidence was common in the Murrumbidgee Irrigation Area. Incidence in coastal districts was low.

SHATTER (Virus). No records.

LATE BLIGHT (Phytophthora infestans). Heavy losses were experienced in the Central Coast and North Coast areas where seedbed and field incidence occurred throughout the season. In some cases crops were abandoned. Where Bordeaux mixture sprays were applied useful control was reported. Reports of damage were also received from the North and Central Tablelands and from the Metropolitan Area.

COLLAR ROT (Phytophthora cryptogea). No records.

BACTERIAL SPECK (Bacterium tomato). A few "flats" were infected in a propagation glasshouse at Leeton. No further development was noted after the infected flats were removed and the remainder were sprayed with Bordeaux mixture.

PUFFY FRUIT (Non-parasitic). No records.

BACTERIAL WILT (Bacterium solanacearum) was reported on numerous occasions from the Metropolitan and North Coast districts. Incidence of the disease was considerably greater than in normal seasons though losses within individual crops were small.

STREAK (Tomato streak virus). Single streak virus caused up to 20% losses in several glasshouses in the Warriewood -Mona Vale (M.A.) district in August-September. It also caused severe losses in two outdoor crops at Chipping-Norton (M.A.). An unidentified virus causing symptoms somewhat resembling those of streak killed several plants in a crop at Glenorie (M.A.).

MOLYBDENUM DEFICIENCY. One record from Newport (M.A.) and one from Terrigal (C.C.).

UNTHRIFTY GROWTH. Plants showing unthrifty growth with papery leaves and interveinal yellowing were found growing on alkaline - pH 7.4 - soil at Mona Vale. A liberal application of sulphur, drilled into the soil, was followed by increased vigour and improved colour.

HORMONE INJURY. Several cases of plant distortion were traced to accidental contamination with weed killing hormones. Fruit setting sprays also caused considerable malformation of fruit without seriously affecting market value.

MISCELLANEOUS PLANTS.

BRASSICA SP.

MOSAIC (Virus) was noted affecting Brassicas in citrus orchards at Narromine (C.W.S.) in early Spring, 1950. Approximately 60% of the plants were affected, with a striking leaf mottle and reduction in vigour.

LEAF SPOT (Alternaria sp.) was prevalent in the same district.

EUCALYPTUS SPP.

LEAF SPOT (Hendersonia eucalypti) caused conspicuous leaf spotting of young trees at Molong (C.W.S.).

LACTUCA SCARIOLA (Prickly Lettuce).

LEAF SPOT (Septoria lactucae) was reported for the first time on this host in N.S.W. from Gunnedah (N.W.S.).

MELILOTUS ALBA (Bokhara Clover).

CHARCOAL ROT (Macrophomina phaseoli) was recorded for the first time in N.S.W. on this host from Inverell (N.W.S.).

NICANDRA PHYSALOIDES (Wild Gooseberry).

POTATO VIRUS X was found to be present in a few weeds in a potato crop at Glen Innes (N.T.).

POLYGONUM HYDROPIPER (Water Pepper).

FLOWER SMUT (Ustilago utriculosa) was recorded from the Metropolitan Area and Dubbo (C.W.S.).

POLYGONUM LAPATHIFOLIUM.

GALL SMUT (Melanopsichium sp.) was recorded for the first time in N.S.W. from Taree (C.C.) and the Colo (C.T.) and Nepean Rivers (M.A.).

FLOWER SMUT (Ustilago utriculosa) was recorded from the Colo River (C.T.).

RUBUS PARVIFOLIUS (Small leaved Bramble).

RUST (Phragmidium barnardi). Heavy infection was noted on roadside plants at Penrith (M.A.), Spring 1950.

RUMEX SPP (DOCK).

LEAF SPOT (Ovularia obliqua) was very prevalent during Spring and Autumn on weeds in the Metropolitan Area.

SCIRPUS PROLIFER.

RUST (Uredo scirpi nodosi). Very heavy infection was noted at Ermington (M.A.), Spring 1950.

SIDA RHOMBIFOLIA (Common Sida or Paddy's lucerne).

ROOT KNOT (Heterodera marioni) was reported for the first time in N.S.W. on this host from the lower MacDonald River (C.T.).

LEAF SPOT (Ramularia sidae) was recorded for the first time in N.S.W. causing defoliation of plants growing under humid conditions at Narara (C.C.). (Identified at Commonwealth Mycological Institute).

SILENE GALLICA (Two branched Catchfly).

LEAF SPOT (Septoria silene). Heavy infection occurred on weeds at Baulkham Hills (M.A.) following cool wet Spring conditions, 1950.

SISYMBRIUM IRIO (London Rocket).

LEAF SPOT AND STEM CANKER (Alternaria sp.). Very heavy infection of weeds was noted at Narromine (C.W.S.) following wet conditions, Spring 1950.

SOLANUM OPACUM (Black Berried Nightshade).

SPOTTED WILT (Tomato spotted wilt virus) was recorded, causing systemic infection of weeds near tomato seedbeds at North Ryde (M.I.A.) during late Spring.

LEAF SPOT (Cercospora tosensis) recorded from a number of Metropolitan localities.

SONCHUS OLERACEUS (Sow Thistle).

LEAF SPOT (Alternaria sp.) was noted causing very heavy infection of weeds at Narromine (C.W.S.) and in the Metropolitan Area, Spring 1950.

TRAGOPOGON PORRIFOLIUS (Salsify).

WHITE RUST (Cystopus tragopogonis) was reported for the first time in N.S.W. on this host causing heavy infection of weeds at Griffith (M.I.A.) during late Spring 1950.

VERBESCINA ENCELIOIDES (Crown beard).

WITCHES BROOM (? Tomato big bud virus) was recorded for the first time from Inverell (N.W.S.).

VERONICA PERSICA (Speedwell).

LEAF SPOT (Ramularia veronicae) caused considerable defoliation of winter weeds in the Metropolitan Area.

XANTHIUM SPINOSUM (Bathurst Burr).

ANTHRACNOSE (Colletotrichum xanthii) was noted at Dubbo (C.W.S.) causing minor infection.

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